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PLACENTAL TRANSFER OF CHLORAMPHENICOL (CHLOROMYCETIN®)

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With the advent of chemotherapy and later the first of the antibiotics, it became possible to extend the range of treatment of the fetus via placental transfer from the maternal to the fetal circulation. This mode of treatment has been extensively used within the range of organisms affected and has proved highly effective both as a preventive and a curative treatment for the mother and fetus. When, in 1947, Ehrlich and associates succeeded in isolating and later producing synthetically pure crystalline chloramphenicol (chloromycetin®) treatment of another large group of infections was placed on a practical basis.[1] The advantages of an orally effective antibiotic the scope of action of which includes most of the infectious agents encountered in obstetric practice, from which no toxic reactions have been reported and which has the potentiality of an inexpensive product are many. The purpose of this study was to determine, if possible, whether there is placental transmission of this new, highly desirable addition to the field of antibiotic therapy.

METHODS

Chloramphenicol was given to 12 normal pregnant patients during term labor in dosage of 2 Gm. orally. This amount was repeated at two hour intervals until delivery occurred. At the time of delivery, 10 cc. of maternal venous blood was drawn and 10 cc. of fetal blood was collected from the umbilical cord.

The method of colorimetric estimation of chloramphenicol developed by Glazko, Wolf and Dill[2] was followed. This determination is based on the reduction of chloramphenicol with metallic zinc, followed by diazotization and coupling with Bratton-Marshall reagent.[3] The accuracy of this method was checked throughout the experiment by adding a known amount (20 to 50 micrograms per cubic centimeter of serum) of chloramphenicol to normal serum. This serum was analyzed just as a patient's sample and was processed at the same time. The values obtained were compared with the amounts of chloramphenicol added. Five separate checks revealed from 83 to 117 per cent recovery, which was well within the limits of error of the method. These results indicated that the method was sufficiently accurate for the determination of chloramphenicol blood levels in this study.

RESULTS

Twelve patients were investigated in this series of determinations. Chloramphenicol was successfully measured in both the maternal blood and the cord blood of 10 of these. Two patients showed no chloramphenicol (within the limits of experimental error) to be present in either the maternal blood or the cord blood. As a general rule the concentration found in cord blood was less than that found in maternal blood, although in most cases they were approximately equal.

Demonstrable chloramphenicol levels of 6.3 to 39.8 micrograms per cubic centimeter appeared in the maternal blood of 10 patients, accompanied with proportionate levels in the cord blood. Five of these patients received one dose of 2 Gm. chloramphenicol at times varying from 71 to 135 minutes prior to delivery. The remaining 5 patients were given a first dose of 2 Gm. 180 to 625 minutes prior to delivery. This initial amount was followed by similar doses administered each two hours until delivery. The total dosage was 4 Gm. in all but 1 patient, who received a total of 8 Gm. of chloramphenicol. In patients 4 and 5 the initial 2 Gm. dose was given 90 and 144 minutes, respectively, prior to delivery, but no chloramphenicol was recovered in either the maternal or cord bloods (see the table).

There was no evidence of toxicity exhibited by any of the patients or infants. Some of the mothers vomited soon after administration of the drug, but this was considered secondary to the ingestion during labor of the large amount of fluid needed to wash down the eight large capsules comprising a 2 Gm. dose of the drug. The regurgitation in most cases so closely followed the administration that absorption of the gelatin capsules had not yet occurred. This precluded any diagnosis of chloramphenicol toxicity. This complication of vomiting, however, did prevent the inclusion of these patients in this study.

COMMENT

The foregoing experiment proves that chloramphenicol does pass the placental barrier and is found in the fetal blood stream in concentrations proportional to that existing in the mother. After a single dose of 2

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Chloramphenicol (chloromycetin®) was supplied for use in this project in the form of kapseals® by Parke, Davis & Company, Detroit.

Dr. Bernard B. Longwell of the Department of Biochemistry and Dr. E. Stewart Taylor of the Department of Obstetrics and Gynecology, University of Colorado Medical Center, aided in this study.

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Gm. is given, a therapeutically effective blood level is found within 71 minutes and persists at least 135 minutes. This concentration is maintained by repeating the initial dose each two hours, and in this study was demonstrated over a period of at least 625 minutes. The difference in blood level between the maternal and fetal circulations would not seem to be sufficient to prevent easily obtainable therapeutic dosage to the infant by the simple oral administration of the drug to the mother.

The pronounced differences in maternal blood concentration demonstrated in the present study, including the 2 cases in which no drug was found, may be partially explained by the fact that these patients were in active labor. It is well known that there may be retention of food in the stomach during labor, and such retention could easily cause an appreciable difference in the blood levels of chloramphenicol in various patients. It may account for the 2 cases in which no

Levels of Chloramphenicol Found in Maternal Blood and Cord Blood After the Designated Dose was Administered to the Mother

Patient	Dose (Gm.)	Time Administered Prior to Delivery (Min.)	Maternal Blood Levels (µg./Cc. Serum)	Cord Blood Levels (µg./Cc. Serum)
1	2	140	35.5	30.3
2	2	71	14.0	9.5
3	2	300	10.5	3.0
	2	80	....	....
4	2	144	Unsatisfactory test	Unsatisfactory test
5	2	90	Unsatisfactory test	Unsatisfactory test
6	2	185	22.3	19.5
	2	65	....	....
7	2	180	9.0	9.3
	2	60	....	....
8	2	625	15.3	14.8
	2	350	....	....
	2	220	....	....
	2	50	....	....
9	2	100	6.3	4.8
10	2	292	39.8	37.3
11	2	135	15.0	14.5
12	2	90	34.3	36.3

chloramphenicol could be demonstrated. The time element is another factor which could cause much variation in the levels of the agent in the blood. Since it is not possible to administer the dose at a certain time before delivery, there would also of necessity be varying amounts of absorption of the drug in each patient.

In human volunteers Ley, Smadel and Crocker [4] found blood levels of chloramphenicol to be approximately 6 micrograms per cubic centimeter two hours after a dose of 2 Gm. These results are in the same range as the levels of chloramphenicol determined in this study.

All work done on egg embryos, experimental animals and human subjects has demonstrated a lack of toxicity except for the production of anemia when the drug is administered to dogs and mice in large dosage over a long period of time.[5] Chloramphenicol is exceptionally stable, is rapidly absorbed from the intestinal tract and is excreted in the urine principally as inactive degradation products. A single dose of chloramphenicol gives a demonstrable blood level within thirty minutes. At the end of eight hours it has disappeared from the blood, and 80 to 92 per cent is recovered in the twenty-four hour urine specimen.[6]

The discovery of chloramphenicol has widely extended the field of antibiotic therapy because of its proved effectiveness against the rickettsial and gram-negative infections. Many in vitro studies have shown the following organisms to be susceptible, and clinical application has revealed great beneficial effect of the drug in nearly every case in which the etiologic organisms were: Escherichia coli, Aerobacter aerogenes, Proteus vulgaris, Pseudomonas aeruginosa, Salmonella typhosa, Brucella suis, Brucella abortus, Brucella melitensis, Pasteurella tularense, Rickettsia prowazeki, Rickettsia tsutsugamushi (the agents of scrub typhus, epidemic typhus, murine typhus, Rocky Mountain spotted fever and rickettsialpox), the virus agents of psittacosis, lymphogranuloma venereum and granuloma inguinale, and the gram-negative cocci.[7] Chloramphenicol has also been proved effective against the spirochetal agents of relapsing fever and syphilis, although its full value in the treatment of the latter disease has not been established. Bliss and Todd have demonstrated the gram-positive cocci to be susceptible to relatively low concentrations of chloramphenicol by in vitro studies. This antibiotic apparently lies midway in effectiveness between aureomycin, the most effective, and streptomycin, the least effective drug according to in vitro studies on gram-positive cocci.[8] If further clinical study should prove the commoner virulent gram-positive cocci susceptible, this drug will indeed be an extremely useful antibiotic. The placental membrane has proved permeable to both penicillin and streptomycin. Now that the placental transfer of chloramphenicol has been proved, the obstetrician has at his command a drug with the advantage of oral administration, rapid action, lack of toxicity and an expanded range of effectiveness.

SUMMARY AND CONCLUSION

In order to determine whether or not there was placental transfer of chloramphenicol (chloromycetin®), 12 patients were given this drug in 2 Gm. doses during term labor. Blood was collected at the time of delivery from both the maternal and fetal venous circulations. Colorimetric determinations revealed that 10 of the 12 had a therapeutically effective serum concentration in fetal cord blood within 71 minutes after initial dosage. This level was maintained for at least 135 minutes, and by repetition of the initial 2 Gm. dose each two hours during labor the level could be maintained as long as 625 minutes. The foregoing results demonstrated that chloramphenicol is transmitted across the human placenta. No toxicity was demonstrated in either the mother or the infant.

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HEMOPOIETIC CHANGES DURING ADMINISTRATION OF CHLORAMPHENICOL (CHLOROMYCETIN®)

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Profound hemopoietic changes have been observed in patients who have received chloramphenicol (chloromycetin®) therapy. Streptomyces venezuelae, from which the agent is derived, was isolated and its antibiotic activity demonstrated by Burkholder and others in 1947.[1] In the same year, Ehrlich and his co-workers [1] extended the studies and prepared the compound in crystalline form. Payne and collaborators [2] first employed the drug clinically in typhus fever in 1948. Chloramphenicol is well absorbed from the gastrointestinal tract, blood levels after oral ingestion of the drug begin comparable to those obtained by parenteral administration.[3] It is excreted largely in the urine, appreciable amounts being found within one-half hour after a single oral dose, and maximal urinary concentrations occur between two and eight hours. Eighty to 92 per cent of the total amount administered is excreted within twenty-four hours.[4]

Summary of Bone Marrow Observations

Date	Case 1, J. B. July 15, 1949	July 27, 1949	Case 2, J. O., July 21, 1949	Case 3, L. M. Aug. 3, 1949	Aug. 15, 1949
Cellularity	+++	++	++	++	+++
Megakaryocytes	Increased	Increased	Normal	Normal	Normal
Myeloblasts	13	10	2	16	9
Progranulocytes	4	4	5	12	14
Myelocytes	65	3	7	82	51
Metamyelocytes	291	90	94	215	167
Band cells	96	56	42	157	89
Segmented cells	76	151	80	139	97
Eosinophils	47	125	21	68	34
Basophils	2	1	1	2	2
Lymphocytes	38	97	21	61	41
Monocytes	3	5	2	5	5
Histiocytes	5	1	11	15	11
Plasmacytes	1	16	24	112	20
Normoblast A	81	3	6	7	12
Normoblast B	265	23	139	26	208
Normoblast C	19	412	525	120	278

In the experiments of Smith and his associates [4] varying degrees of anemia were noted in 3 dogs receiving 1 Gm. of chloramphenicol intramuscularly (72 to 88 mg. per kilogram of body weight per day). In the severest case, a red blood cell count of 2,300,000 (42 per cent hemoglobin) was observed on the tenth day of therapy as contrasted to the initial count of 5,300,000 red blood cells (85 per cent hemoglobin). However, the red blood cell count rose to 3,700,000 (60 per cent hemoglobin) (presumably while the animal was still receiving the drug) at the end of the experiment on the twenty-fourth day. In the second animal anemia developed gradually during the administration of chloramphenicol, with final values approximating those of the first dog. In the third dog the initial red blood cell count of 5,800,000 (91 per cent hemoglobin) dropped to 4,300,000 (85 per cent hemoglobin) on the tenth day, to return to a final value of 5,200,000 red blood cells (85 per cent hemoglobin). The dog which received 1 Gm. of chloramphenicol daily by the oral route (143 mg. per kilogram per day) did not manifest anemia. None of the dogs receiving the drug either parenterally or orally showed appreciable changes in the total leukocyte or differential counts. Changes in the hemogram were not noted in rabbits, mice or guinea pigs.[5]

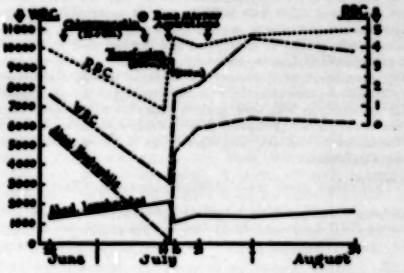

Fig. 1 (case 1).—Blood changes during administration of chloramphenicol. Especially noteworthy in this case was the development of severe anemia.

Toxic manifestations have not been described to date following oral administration of chloramphenicol.[6] Two normal men tolerated a dose of 10 Gm. daily for ten days without untoward changes in the blood or urine.[5a]

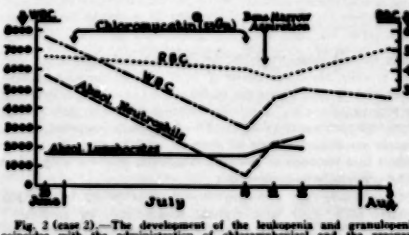

Fig. 2 (case 2).—The development of the leukopenia and granulopenia coincides with the administration of chloramphenicol and the recovery with its discontinuance.

Our interest in the hemopoietic effect of chloramphenicol was aroused by observation of a red blood cell count of 850,000 and 17 per cent (2.6 Gm.) hemoglobin in a

From the Hematology Laboratory and the Hektoen Institute for Medical Research of the Cook County Hospital.
Read before the twenty-second annual meeting of the Central Society for Clinical Research, Chicago, November 4, 1949.

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Negro boy 11 years of age (98 pounds [44.5 Kg.]) with uncomplicated typhoid four days after discontinuance of therapy.

CASE 1.—J. B., a Negro boy aged 11 had been receiving chloramphenicol (total dose 53.0 Gm.) for eighteen days. Blood values at the beginning of therapy were within normal limits (fig. 1). On the twenty-third day of therapy his white blood cell count was 3,200 with only 8 per cent neutrophils and the bone marrow revealed a decided maturation arrest in erythropoiesis with a relative diminution and distinct shift to the left in granulopoiesis (see the accompanying table). Seventeen days after completion of treatment the marrow showed accelerated erythropoiesis, with essentially normal granulopoiesis. A remarkable eosinophilia was now present (table). No abnormalities were noted in the peripheral blood twenty-two days after discontinuation of therapy. No other drugs had been administered except penicillin.

Two other cases were observed almost simultaneously.

CASE 2.—J. O., a Negro aged 41 with brucellosis, weight 165 pounds (74.8 Kg.) received 53 Gm. of chloramphenicol in nineteen days. The initial examination of the blood revealed essentially normal values (fig. 2). At completion of therapy the man had a white blood cell count of 3,000 with 22 per cent neutrophils, and two days later the marrow showed a relative decrease in granulopoiesis and a relative increase in erythropoiesis with some maturation arrest (table). The hemogram improved immediately on discontinuance of therapy, and fourteen days later values had returned to normal. Penicillin was the only other drug previously administered.

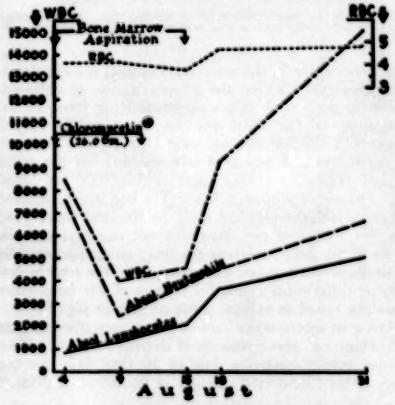

Fig. 3 (case 3).—Precipitous development of leukopenia and granulopenia coincidentally with administration of chloramphenicol.

CASE 3.—L. M., a Negro boy aged 14 years, weight 105 pounds (47.6 Kg.) with typhoid (complicated by amebiasis) had an initial count of 4,160,000 red blood cells, hemoglobin 79 per cent (12.3 Gm.) and 8,500 white blood cells with 90 per cent neutrophils and 10 per cent lymphocytes. Chloramphenicol was administered (3 Gm. daily, total dose 26 Gm.) for nine days. On the sixth day the leukocyte count was 4,000 with 62 per cent neutrophils (fig. 3). There were no quantitative changes noted in the platelets. On the fourth day after completion of therapy examination of the marrow revealed decided diminution in the number of granulocytes with some shift to the left and a relative increase in erythropoiesis compared to that in the marrow obtained prior to therapy (table). Emetine hydrochloride, 65 mg. daily, had been administered between the ninth and thirteenth days.

Remarkable therapeutic effectiveness was demonstrated by chloramphenicol in controlling the infections of these patients.

COMMENT

In 3 patients, 2 with typhoid (in 1 instance complicated by amebiasis) and 1 with brucellosis, profound blood and marrow changes were observed during

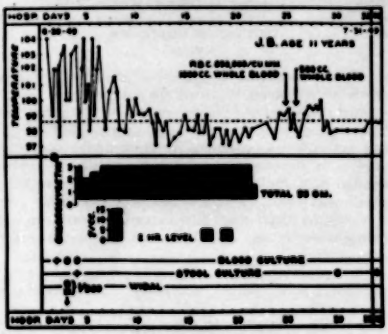

Fig. 1 (case 1).—Summary of clinical data.

chloramphenicol therapy. These changes consisted of a precipitous fall in the total leukocyte count, which occurred by the seventh day in 1 case and continued as long as the drug was administered. The leukopenia resulted primarily from a decrease in the number of granulocytes in the marrow due to a maturation arrest without significant alteration in the monocytes or lymphocytes.

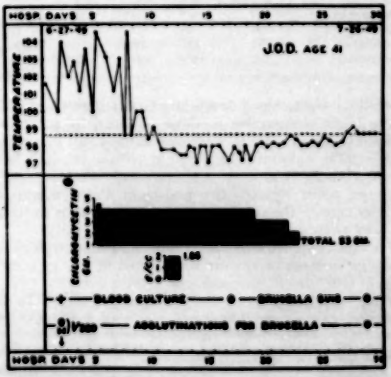

Fig. 2 (case 2).—Summary of clinical data.

Severe anemia occurred in 1 case, with an erythroid maturation arrest in the marrow. No significant changes occurred in the platelet count in the 1 instance in which this factor was studied. Both marrow and blood changes were reversible, and an immediate rise of the white blood cell count followed discontinuation of therapy.

Although pronounced hematologic changes have been described in typhoid [7] and no previous toxic effects have been ascribed to orally given chloramphenicol, the following evidence strongly suggests cause and effect relationship between the administration of the drug and the changes in marrow and blood:

1. The leukopenia developed after chloramphenicol therapy was started in spite of definite clinical improvement.
2. The absolute and relative granulocyte levels uniformly fell lower than those ordinarily observed in typhoid or brucellosis.
3. The marrow in every instance showed a relative and absolute granulopenia with a maturation arrest.
4. An immediate precipitous rise in granulocytes and leukocytes followed the discontinuance of chloramphenicol therapy.
5. On the basis of the erythroid maturation arrest in the marrow, chloramphenicol was probably responsible, at least in part, for the fall in the number of red blood cells.

These observations assume added importance in view of the recent work of Smadel and co-workers,[8] who advocate larger periods of chloramphenicol therapy in typhoid to prevent clinical and bacteriologic relapses. The toxic manifestations of this drug in man will have

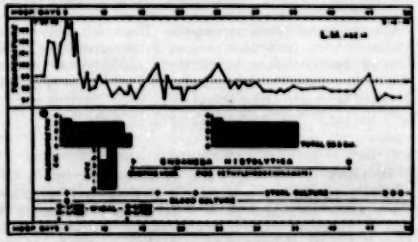

Fig. 6 (case 3).—Summary of clinical data.

to be studied more extensively before it can be considered an absolutely safe therapeutic agent. This is particularly true in the instances in which large total dosages are employed over relatively short time periods, as in the 3 cases reported herein.

SUMMARY

In three patients who were receiving chloramphenicol (chloromycetin®) in therapeutic doses, a severe, reversible granulopenia appeared in the blood and a granulocyte hypoplasia with both erythroid and granulocytic maturation arrest was found in the marrow.

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Groups and Clinics.—The ethical principles actuating and governing a group or clinic are exactly the same as those applicable to the individual. As a group or clinic is composed of individual physicians, each of whom, whether employer, employee or partner, is subject to the principles of ethics herein elaborated, the uniting into a business or professional organization does not relieve them either individually or as a group from the obligation they assume when entering the profession.—Section 3, Chapter I, of the PRINCIPLES OF MEDICAL ETHICS of the American Medical Association.

AUREOMYCIN TREATMENT OF MENINGITIS DUE TO BACILLUS PYOCYANEUS AND BACILLUS AEROGENES

Report of Two Cases with Recovery

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During the brief period which has elapsed since aureomycin and chloramphenicol were added to the impressive group of potent and relatively nontoxic antibiotics, their usefulness has been established in the treatment of various viral, rickettsial and bacterial maladies. Certain infections, such as those reported in this paper, are observed so rarely that it is impossible for any one observer to adequately evaluate the efficacy of these newer antibiotics. By necessity one must, therefore, resort to reports of single cases. This report summarizes observations made on 2 patients who were treated with aureomycin for bacterial meningitis, which was caused in one by Bacillus pyocyaneus (Pseudomonas aeruginosa), and in the other by Bacillus aerogenes (Aerobacter aerogenes). After aureomycin therapy both patients recovered from the infection.

REPORT OF CASES

CASE 1.—J. U., a 9 year old boy weighing 32 Kg., was admitted to the Children's Hospital on March 3, 1949. Clinical and radiographic studies revealed a tumor of the spinal cord. A dorsolumbar laminectomy performed on May 5 revealed an intramedullary lipoma extending from the level of the eleventh dorsal vertebra to the second lumbar vertebra. Since it was impossible to remove the extensive neoplasm without causing serious neurologic defects, a decompressive laminectomy was done. A free flow of cerebrospinal fluid was obtained; the dura was left open, and the wound was closed in the usual manner. For prophylactic purposes penicillin was administered (300,000 to 400,000 units daily).

On May 17, the twelfth postoperative day, a cerebrospinal fluid leak developed, and the boy presented signs and symptoms of meningeal irritation. Examination of cerebrospinal fluid obtained by aspiration of the wound revealed numerous gram-negative rods and rare gram-positive cocci; on culture B. pyocyaneus was isolated. The fluid obtained two days later was grossly cloudy and contained numerous bacteria; there were 2,400 leukocytes per cubic millimeter, mostly polymorphonuclear cells.

In view of the bacteriologic observations, streptomycin (3 Gm. intramuscularly each day) and sulfadiazine (6 Gm. orally each day) were administered. Because this strain of B. pyocyaneus subsequently was found to be highly resistant to streptomycin, this drug was discontinued, and treatment with aureomycin (3 Gm. orally each day) was begun on May 22. Sulfadiazine therapy was also discontinued at that time. The oral ingestion of aureomycin was associated with severe nausea and frequent emesis. Therefore, the drug was administered intravenously (0.1 Gm. diluted in 100 cc. of sixth-molar sodium lactate injection twice daily) from June 13 until June 20 and rectally (3 Gm. daily) from June 13 until June 22.

On May 21 an attempt to close the cerebrospinal fluid leak failed, but on May 31 surgical repair was successful. Decompressive cisternal taps were then done on several occasions. It was not until June 11 that the culture of the cerebrospinal fluid became sterile, and all subsequent specimens remained

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Aureomycin hydrochloride for parenteral use was supplied by Lederle Laboratories Division, American Cyanamid Company, through Dr. Benjamin W. Carey.

sterile. The child showed clinically, as he had on admission, the neurologic abnormalities associated with tumor of the spinal cord. Recovery from the meningitis is attributed, in part or entirely, to the administration of aureomycin.

CASE 2.—D. S., a 2 day old boy weighing 4 Kg., was admitted to the Children's Hospital on June 10, 1949 for surgical repair of a sacral meningomyelocele. Neurologic examination showed normal conditions, and the small meningomyelocele was epithelized and free of infection. The lesion was repaired on June 21. On June 28, the seventh postoperative day, leakage of cerebrospinal fluid from the wound was noticed. Three days later the skin wound was reopened. No definite sinus was found leading to the spinal canal, so the skin was closed carefully. The leak persisted for several days, and the existence of an Arnold-Chiari malformation was postulated, as the head increased in circumference from 14 to 15 inches (36 to 38 cm.) between June 10 and July 5. Signs and symptoms of meningeal irritation developed on July 5, and a right ventricular tap yielded cloudy fluid. Examination of the fluid revealed 11,750 leukocytes per cubic millimeter, 98 per cent of which were polymorphonuclear cells; 8 mg. of glucose per hundred cubic centimeters; 290 mg. of total protein per hundred cubic centimeters; scattered gram-negative bacilli on microscopic examination, and B. aerogenes on culture. This infection developed during prophylactic administration of penicillin (180,000 units daily) and sulfadiazine (0.2 Gm. per kilogram of body weight subcutaneously each day).

On July 5, in view of the bacteriologic observations, the administration of penicillin was discontinued and treatment was begun with aureomycin, orally (100 mg. per kilogram daily)

Three twenty-four hour cultures of Bacillus aerogenes (Aerobacter aerogenes) on Endo's medium; *A*, nonmucoid form prior to therapy; *B*, mucoid type during treatment, and *C*, nonmucoid type prior to sterilization of the cerebrospinal fluid.

and rectally (250 mg. twice daily), and dihydrostreptomycin intramuscularly (50 mg. per kilogram daily). On July 14 the oral dose of aureomycin was doubled because the infection was not controlled. Ventricular cultures made daily were positive for the pathogen. On July 14, 15, 16 and 17 dihydrostreptomycin (10 mg. diluted in 20 cc. of isotonic sodium chloride solution) was injected into either lateral ventricle. On July 20, the intramuscular administration of dihydrostreptomycin was stopped. Cultures of the ventricular fluid were still positive for B. aerogenes. From July 16 until August 3 chloramphenicol (6 Gm. daily) was given orally in addition to aureomycin.

In view of the fact that the infection persisted in spite of all therapeutic measures used, aureomycin was administered intraventricularly and intrathecally. Although there is potential danger in any form of intrathecal medication and particularly in the administration of this hitherto untried drug, an extremely small amount of aureomycin, 1 mg. diluted in 1 cc. of sixth-molar sodium lactate solution, was injected into the right lateral ventricle on July 18. There was no untoward reaction. A few hours later 10 mg. of aureomycin diluted in 10 cc. of sixth-molar sodium lactate solution was injected into the same ventricle. This form of therapy was repeated on July 19, 21, 22, 23, 24, 25, 26, 27 and 28. Since the organism could also be recovered from the spinal fluid, 1 mg. of aureomycin diluted in 1 cc. of sixth-molar sodium lactate injection was given intrathecally on July 21, 22 and 23. With the institution of this therapy the spinal fluid became sterile on July 21 and the ventricular fluid on July 26, and both remained sterile. On August 4 the oral and rectal administration of aureomycin and the oral administration of chloramphenicol were discontinued. The infant recovered completely from the infection.

At the age of 2 months the occipitofrontal circumference of the head of this infant measured 16 inches (41 cm.). On August 8 sodium indigotindisulfonate was injected into the right lateral ventricle and was later recovered from the lumbar subarachnoid fluid. Obviously no major obstruction of the cerebrospinal fluid pathways existed.

The strain of B. aerogenes isolated from this patient presented a number of interesting characteristics. When first recovered, the colonies, on medium of Endo and blood agar, were smooth and glistening but not particularly mucoid (A of the figure). They were similar to colonies of Escherichia coli. The biochemical characteristics, however, were those of Aerobacter aerogenes, inasmuch as the strain failed to produce indol, had a negative reaction to the methyl red, had a positive Voges-Proskauer reaction and grew in Koser's citrate solution. Moreover, on subculture it changed into an extremely mucoid type of organism characteristic of B. aerogenes and Klebsiella pneumoniae (Friedländer's bacillus). It is interesting to note that a similar change took place in vivo: cultures of cerebrospinal fluid obtained on subsequent occasions, between July 7 and July 23, revealed the mucoid type of organism (B of the figure). Repeated subcultures of this mucoid type resulted in dissociation back to the nonmucoid variety. Interestingly enough, the last two positive cultures obtained from the patient on July 24 and 25 were of the nonmucoid type (C of the figure). Subsequent cultures remained sterile.

Of further interest was the fact that even prior to the treatment of the patient with streptomycin, the organism was extraordinarily resistant to this antibiotic, growing readily in the presence of 40,000 micrograms per milliliter. Fortunately, the strain was susceptible to aureomycin. This new antibiotic was bacteriostatic in amounts as low as 3 micrograms per milliliter and bacteriocidal in concentrations of 100 micrograms per milliliter. The strain did not become substantially more resistant to aureomycin. On the basis of these observations it is reasonable to assume that the streptomycin therapy could not have been of much avail in the treatment of this particular patient.

COMMENT

In order to evaluate the role of aureomycin in the recovery of these 2 patients, it is necessary to know the outlook for this type of infection in the absence of specific therapy. Although the literature on meningitis caused by B. pyocyaneus [1] and Esch. coli [2] has been reviewed competently on different occasions, it is not possible to determine the fatality rates accurately. This is due to the fact that these surveys are based largely on reports of isolated cases, particularly those in which recovery took place. Obviously, then, the fatality rates of these rare forms of meningitis must have been even higher in the past than appears from these surveys.

In 1936, Evans,[1] on the basis of a review of 42 cases of meningitis caused by B. pyocyaneus, estimated the fatality rate to be approximately 50 per cent. It is evident from the observation of these patients prior to the era of modern chemotherapy that this type of meningitis tended to be subacute rather than fulminating and that recoveries were not as unusual as they are in meningitis due to such organisms as pneumococci and Hemophilus influenzae. Since 1936, a number of other reports on meningitis caused by B. pyocyaneus have appeared in the literature.[3]

1. Evans, F. L.: Primary Meningitis Caused by Pseudomonas Aeruginosa (Bacillus Pyocyaneus), M. Rec. 144:111 (Aug. 5) and 172 (Aug. 19) 1936.

2. Barrett, G. S.; Rammelkamp, C. H., and Worcester, J.: Meningitis Due to Escherichia Coli, Am. J. Dis. Child. 63:41 (Jan.) 1942.

3. (*a*) Cairns, H.: Penicillin in Head and Spinal Wounds, Brit. J. Surg. 33:199 (July) 1944. Botterell, E. H., and Magner, D.: Meningitis Due to Pseudomonas Pyocyanea: Penetrating Wounds of Head, Lancet 1:112 (Jan. 27) 1945. Evans, F. T.: Infection from Spinal Analgesia: Warning, Lancet 1:115 (Jan. 27) 1945. Kremer, M.: Meningitis After Spinal Analgesia, Brit. M. J. 2:309 (Sept. 8) 1945. (*b*) Radke, R. A., and Cunningham, G. C.: A Case of Meningitis Due to Pseudomonas Aeruginosa (Bacillus Pyocyaneus) and Neisseria Flavescens with Recovery, J. Pediat. 35:1 and 99 (July) 1949. (*c*) Vayloteke, C. A.: Pseudomonas Pyocyanea Meningitis Following Spinal Anesthesia, Brit. M. J. 1:179 (Feb. 1) 1947.

It may be recalled that this type of meningitis may be the result of contamination at the time of lumbar puncture, spinal anesthesia, trauma or operative procedures involving the brain and spinal cord. In other instances it originates from foci of infection such as otitis media. In still other cases it represents one of the complications of bacteremia or sepsis. In the past, when recovery has taken place, usually after a fairly long period of weeks and months, it was attributed to drainage of the cerebrospinal fluid, administration of sulfonamide drugs and, more recently, to therapy with streptomycin.[4b] In the case reported here aureomycin played a significant role in combating the infection.

Concerning meningitis caused by members of the Esch. coli and B. aerogenes group, Barrett, Rammelkamp and Worcester[2] in 1942 reviewed the available literature, which included 110 cases reported between 1887 and 1941. In only 8 of these cases was B. aerogenes the causative agent; 7 patients succumbed to the disease and 1 recovered with complications. The fatality rate of the group as a whole was 80 per cent, a figure which is obviously lower than it would have been had the survey not been based on numerous reports of isolated cases. In an earlier study Ducasse[4] analyzed 35 cases of meningitis due to Esch. coli; only 2 patients recovered. So far as we are aware, the case reported here is the first instance of recovery from meningitis due to B. aerogenes after aureomycin therapy. Sterilization of the cerebrospinal fluid occurred readily after the intraventricular and intrathecal administration of the drug. Although no immediate ill effects resulting from these therapeutic measures were noticed, use of this route of administration is not recommended unless all other methods fail to accomplish sterilization of the cerebrospinal fluid. It is interesting to note that the strain of B. aerogenes present at the onset of the meningitis was extraordinarily resistant to streptomycin, growing in vitro in the presence of 40,000 micrograms of streptomycin. Fortunately, growth of the organism was inhibited or delayed by small amounts of aureomycin (3 micrograms or more), and the organisms were killed in vitro by 100 micrograms of the drug. That aureomycin contributed largely to the overcoming of the infection can hardly be doubted.

SUMMARY

Acute purulent meningitis due to Bacillus pyocyaneus (Pseudomonas aeruginosa) of the melanogenic type and meningitis due to Bacillus aerogenes (Aerobacter aerogenes) were observed in two children as complications of surgical exposure of the spinal cord. In both instances the infection entered the meninges through a cerebrospinal fluid leak and occurred during prophylactic administration of penicillin. Both strains were susceptible to aureomycin, though the strain of B. aerogenes was extraordinarily resistant to streptomycin. Recovery from the meningitis can be attributed largely to aureomycin therapy.

The patient with meningitis caused by B. pyocyaneus received the drug orally, rectally and intravenously. Aureomycin was given to the other patient orally, rectally, intrathecally and intraventricularly. No immediate ill effects were noticed from the intrathecal or intraventricular administration of aureomycin in the dosage employed. We believe that this route of administration should be resorted to only if all other routes of therapy fail.

4. Ducasse, P. G.: Méningite à colibacilles chez le nourisson, Thèse, Bordeaux, 1925-1926.

VENTILATION IN THE FLOW OF MEASLES AND CHICKENPOX THROUGH A COMMUNITY

Progress Report, Jan. 1, 1946 to June 15, 1949, Airborne Infection Study, Westchester County Department of Health

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During the past decade, increasing attention has been given to the theory that indoor air is a vehicle of respiratory infection and to the logical sequence of such a theory, that the transfer from person to person of such infection can be reduced by increasing ventilation. In the sense of actual replacement of vitiated air by fresh outdoor air, however, ventilation on a scale adequate to reduce disease incidence is impractical; interest has therefore been focused on the sanitary equivalent of ventilation, air disinfection.

A study of air disinfection in certain schools in and near Philadelphia demonstrated that the chances of transfer from child to child of the viruses of measles and chickenpox[1] within the classrooms had been decidedly reduced by radiant disinfection of air.[2] Thus the physical factors governing bactericidal irradiation of air, on which the engineering design of installations is based, were sufficiently well understood to lead to dependable reductions in the transfer of these infections from person to person within the particular atmospheres in which the ultraviolet lights were placed. Such a reduction in infections among members of groups remaining continuously within an irradiated atmosphere, as among children in irradiated hospital wards, would necessarily mean a reduction in the total number of cases.

But schoolrooms are not the only places where school children contract air-borne infections. They move about, and they carry infection from atmosphere to atmosphere with them. Thus it was found in the Philadelphia study that the arteries through which measles and chickenpox flow to the individual child anastomose to an extent that even after the importance of the school in their spread had been decidedly lowered by radiant disinfection (as measured by cases secondary to classroom exposure), other exposures outside the school were sufficiently numerous to mask the benefits as measured by total cases.

In January 1946 the Westchester County Department of Health undertook the next logical step to these studies, an investigation of all the channels of flow of measles and chickenpox through a suburban community and of the possibility of interrupting these channels by disinfection not only of school atmospheres but of other atmospheres shared by children of the community.

From the Westchester County Department of Health, Director of Study (Dr. Wells) and Commissioner of Health (Dr. Holla).
Records were kept by Miss Mary Mathers, and Mr. Oscar Fossum systemized the servicing of the ultraviolet lights.
This study was aided by a grant from the Milbank Memorial Fund and by equipment from the General Electric Company.

1. Measles and chickenpox were adopted as indexes of this transfer because infections contracted in the classrooms could be identified. The incubation periods are clearcut, one attack confers a lasting immunity (thus largely limiting the population at risk to children), and exposures to these diseases are seldom so numerous that cases cannot be related to them with reasonable probability. It was not possible thus to relate colds to exposures, because of the shorter and less definite incubation periods, the multiplicity of exposures in and out of the school and the confusion of patterns of spread resulting from inclusion of adults in the population at risk.

2. Wells, M. W.: Ventilation in the Spread of Measles and Chickenpox Within Schoolrooms, J. A. M. A. 129:197 (Sept. 25) 1945.

Thus at the beginning of the Westchester Study the role of air as the medium through which the infections of measles and chickenpox were borne had been intensively studied. But before this information could be applied to the practical objective of a dependable reduction in the incidence of these diseases in a community, it was necessary to know more of the children who carry infection from atmosphere to atmosphere and to form an appraisal of the importance of various atmospheres wherein children congregate in maintaining the dynamic spread [3] of infection through a community.

PLAN OF STUDY

In a small suburban village as many places where young children congregate were to be equipped with ultraviolet lights as was practicable. Obviously all such atmospheres could not be irradiated, but it was hoped that those essential to dynamic spread within the village could be covered. That is to say, however often children were infected while outside the village or by visiting children from without the village, chain spread would not follow.

Certain questions needed answers: (1) Would disinfection of the atmospheres initially chosen for irradiation prevent dynamic spread within the village; (2) if not, did the evidence point to other atmospheres whose irradiation would accomplish this (especially was irradiation of homes indicated), and (3) if dynamic spread had been prevented, was this sufficient to reduce the total number of cases or would introductions from without the test area be so numerous as to mask the reduction? As to the children who carried infection from atmosphere to atmosphere, were their comings and goings entirely dependent on chance, or could influences be disclosed which would aid in preventing this traffic in infection?

Methods of Effecting Objective.—1. Choice of Test Village: Two Westchester County villages, one irradiated and one not, were to be compared. Both were to be far enough north to escape complexities such as would impede tracing infections in the urban area near New York and White Plains but far enough south to escape the independability of introductions of measles and chickenpox in more rural areas further north. Pleasantville, one hour by train from New York City, was selected to be irradiated and Mount Kisco, ten minutes farther north, to be the control. As of Jan. 1, 1946 the total and school populations were similar: Pleasantville, 4,357 and 783; Mount Kisco, 5,811 and 870. Each village has a public school system, grades kindergarten to 12, and a parochial school, grades 1 to 8. Ventilation of all classrooms used for the susceptible younger children is by window. Neither village has a large private school, though a few children from each village attend one just outside of Mount Kisco. When the study was planned, it was considered immaterial in which village the ultraviolet lights would be installed. It now seems that the choice was not so unrelated to the results as was then thought.

2. Installation of Ultraviolet Lights: During the first three months of 1946, ultraviolet lights were placed in all schools of Pleasantville, three of the Sunday schools, the Children's Room of the Library, the village motion picture theater and the Department of Health clinic rooms. During the autumn of 1946 three churches were equipped, the Girl Scout and Boy Scout huts and the most patronized of the soda fountains. Not until December 1947 was it possible to irradiate the Catholic Church. Only one group has refused cooperation, the Christian scientists. Although the village motion picture theater was one of the first places equipped with lights, the several designs have not been satisfactory because of an objectionable excess of visible light.

Indirect fixtures containing 30 watt hot cathode germicidal lamps were mounted 7 feet (213 cm.) from the floor on the end walls, on the basis of two units per typical classroom. Expressed in the tentative terminology of the Society of Heating and Ventilating Engineers, the average intensity throughout the irradiated zone of a typical room was 19 milliwatts per square foot (19 microwatts per sq. cm.) or a total lethal irradiation of 61 foot-watts for the irradiated volume of 3,200 cubic feet. Care was at all times taken to see that intensities at the working level were below the maximum specified by the Council of Physical Medicine of the American Medical Association for seven hour occupancy.[4]

Technic of Judging Results.—No satisfactory criteria for appraising results of air disinfection in reducing disease incidence among members of intermittent aggregations have been suggested. An attack rate among susceptible persons, the effective contact rate, is a satisfactory measure of conditions facilitating or retarding the transfer of micro-organisms in a particular atmosphere at a particular time. Comparison of effective contact rates in irradiated and unirradiated atmospheres is a measure of the effectiveness of the disinfection. It is, however, a measure of a static incident in a particular atmosphere, in one place at one time.

Even in a particular group sharing a particular atmosphere, changes effected over a series of exposures and reexposures to the disease are not so simply measured. For direct comparison of attack rates among groups of susceptible persons, their initial number must be the same, for the infectees of one exposure become the infectors of the next and differences are compounded. Under identical conditions of spread, that is, if with the first exposure the percentage of susceptible persons attacked should be the same, the number of cases would vary with the number of susceptible persons. If the number reexposing the groups were greater, the next generation of infectees would be proportionately increased, and these differences would again be compounded. When the dynamic epidemic was over, it would be found that the percentage of susceptible persons attacked would vary directly with the percentage originally susceptible. (Children remaining susceptible at the end of one epidemic will, in subsequent epidemics, be members of more immune groups in which the attack rates will be lower, which may give a false impression of subclinical immunity.)

Additional complexities arise if the observed groups occupy the disinfected atmospheres for regular but limited periods only (as in the case of schools) and recombine into other aggregations in their remaining time. A reduction in the effective contact rate in any one of these groupings, indicative of adequacy of the disinfection, may or may not effect a reduction in total cases depending on the exposures outside the irradiated atmosphere, and the more involved epidemiologic question, where the cases were infected, becomes important.

3. The term dynamic spread is used to mean infection maintained for a series of exposures within a particular group without reintroduction by exposure to persons outside the group. Static infection, on the other hand, implies infection by exposure to members of other groups or secondary to them, but not initiating chain spread within the group.

4. Ultraviolet Lamps for Disinfecting Purposes, report of Council on Physical Medicine, J. A. M. A. 129:1166 (Dec. 22) 1945.

How, then, can the effects of air disinfection in a community be evaluated? There is, as we know,[3] a critical density of susceptible persons in a population, the "threshold density of susceptibles," varying with each condition of spread, above which infection, if introduced, may spread and below which it will certainly die out. This percentage susceptibility varies in an air-borne disease primarily with factors affecting ventilation, such as season and climate. If air disinfection is indeed the equivalent of ventilation, the threshold density of susceptible persons should vary with it.

This threshold can be conveniently determined in practice by plotting the fall in percentage of susceptibility of the group during an epidemic, usually on a logarithmic scale at weekly intervals. The point of inflection of the curve (the percentage of susceptibility at which 1 case gives rise on the average to 1 case, i. e., the peak of the epidemic) marks the threshold susceptibility. Comparison of these threshold values is the best appraisal of a sanitary measure in preventing the dynamic flow of an infection, although other factors than the disinfection may exert an influence.

The records of the Westchester Study have been simple: a directory of all children (0 to 18 years of age) in each village (based on the annual child census taken by the villages as a check on school attendance); a questionnaire card of past attacks of measles and chickenpox, filled out by the mothers; detailed histories of all cases, focusing attention on the source (based on personal discussion with the mother); a "class history" of each school class, listing the pupils, dates of additions and withdrawals, the susceptibility to measles and chickenpox of each child, exposure of the class to either disease (i. e., school attendance of a child within forty-eight hours of clinical onset), and the resulting cases. School and Health Department records and personal interest of the parents in reporting cases have contributed to the completeness of the records.

RESULTS

Initial Susceptibilities (Feb. 15, 1946).—The first tabulation of susceptibilities (Feb. 15, 1946) made it evident (table 1) that an epidemic of chickenpox was possible in Mount Kisco and one of measles in Pleasantville, unless the latter could be averted by air disinfection. No case of either disease occurred from September 1945 until February 1946; hence, cases which occurred after the study began represented the total for the academic year.

Incidence of Measles and Chickenpox.—During the forty-two months covered by this report (January 1946 to June 1949), cases of measles and chickenpox have numbered:

Measles, Pleasantville: 0,1,9,15,14,9,5,0,0,0,0,0,0,1,9,27,4,4,0,1,0,0,0,1,0,1,3,59,44,4,3,0,0,0,1,2,0,0,0,1,0.

Measles, Mount Kisco: 0,0,0,4,8,10,4,1,0,1,1,0,1,0,2,1,0,1,0,0,1,1,0,0,0,0,0,0,23,103,42,1,1,0,0,1,1,3,2,12,3,0.

Chickenpox, Pleasantville: 0,0,3,0,7,14,4,1,0,0,2,0,3,5,6,6,0,0,0,0,1,3,4,3,3,3,0,0,2,5,3,1,0,0,2,0,0,3,3,3,6,8,0.

Chickenpox, Mount Kisco: 0,4,11,13,77,16,0,0,1,1,1,7,14,13,6,5,4,0,0,0,0,0,0,0,0,2,4,0,5,0,1,0,0,2,1,1,4,6,41,47,11,0.

In tables 2 and 3 cases are classified by school years, by the age group to which the child belonged and the probable source of the infection. In figures 1 and 2 the monthly levels of susceptibility of the preschool children over 6 months of age and of the kindergarten to grade 4 (inclusive) group are shown graphically. The natural rise in susceptibility levels incident to births and advance into older age groups is offset by the slight falls caused by sporadic cases and the sharp drops in times of epidemics.

Certain features in connection with these cases deserve comment:

1. Jan. 1, 1946 to Aug. 31, 1946: Measles: The spring of 1946 was a "measles year" in New York City and the lower part of Westchester County. In view of the relatively low susceptibility of the kindergarten to grade 4 group in Mount Kisco (38.8 per cent) spread was not expected, and 27 cases spread over a period of six months presented the typical pattern of a contagious disease working against the resistance of a high immunity. In Pleasantville, however, 55.2 per cent of this group and 94.6 of the preschool group were susceptible. From February until June the disease was introduced into Pleasantville without initiating chain spread. Twenty-two children exposed fourteen different classes (ten of the exposures on the day of onset), causing only 11 secondary cases. In spite of the effectiveness of the ultraviolet lights in classrooms and presumably in other places where the results of exposures could not be determined, Pleasantville had, before the season was over, 52 cases of measles with a maximum of 15 cases in one month, April. Certainly this static pattern (repeated introductions and small episodes, without chain spread) was not typical of measles in a highly susceptible community bombarded with introductions in a measles year. The drop in susceptibility of the kindergarten to grade 4 group from 54.7 to 49.4 per cent does not define a "threshold susceptibility," for spread was never dynamic in the village.

Chickenpox: The epidemic of chickenpox materialized in Mount Kisco, reaching its peak in May. It was centered in the parochial school, which was understandable, for susceptibility was high in the kindergarten to grade 4 group (65.0 per cent) and the school is constantly overcrowded, as is also the parochial school

TABLE 1.—*Susceptibility to Measles and Chickenpox*
as of Feb. 15, 1946

Group	Pleasantville Total	Pleasantville Susceptibility to Measles No.	Pleasantville Susceptibility to Measles %	Pleasantville Susceptibility to Chickenpox No.	Pleasantville Susceptibility to Chickenpox %	Mount Kisco Total	Mount Kisco Susceptibility to Measles No.	Mount Kisco Susceptibility to Measles %	Mount Kisco Susceptibility to Chickenpox No.	Mount Kisco Susceptibility to Chickenpox %
Preschool*	294	278	94.6	247	84.0	291	247	84.9	245	84.2
Kindergarten to grade 4	316	173	54.7	121	38.3	344	123	35.7	199	57.8
Grades 5 to 12	467	76	16.3	97	20.8	526	69	13.1	158	30.0

* Not including 27 infants on the Pleasantville census and 24 on the Mount Kisco census who were under 6 months of age, since their susceptibilities were indeterminate.

3. McKendrick, A. G.: The Dynamics of Crowd Infection, Edinburgh M. J. 47: 117, 1940.

of Pleasantville. Of the 67 susceptible village children in the kindergarten to grade 4 group, 61 contracted the disease in an explosive outbreak. Eleven of the 30 susceptible children in the grade 5 to 8 (inclusive) group also were infected. Of the 34 preschool children with the disease, 25 were exposed at home by parochial school pupils. Thus in 97 of the 121 cases in Mount Kisco the children either attended this school or were exposed at home by its pupils.

TABLE 2.—*Total Cases of Measles by Groups, with Presumptive Sources Indicated*

Age Group	Number of Cases	Exposed in: Home and Classroom	Classroom, not Home	Home, not Classroom	Not Home, not Classroom
Pleasantville, Irradiated					
Jan. 1, 1946 to Aug. 31, 1946					
Preschool	15	..	..	9	6
Public, Kindergarten to 4	30	2	11	10	7
Public, 5 to 8	7	0	1	1	5
Public, 9 to 12	1	0	0	1	0
Sept. 1, 1946 to Aug. 31, 1947					
Preschool	19	..	..	7	11
Public, Kindergarten to 4	1	0	0	1	0
Public, 5 to 8	3	0	0	0	3
Parochial, 1 to 4	20	5	13	0	2
Parochial, 5 to 8	3	0	0	1	2
Adult	1	..	..	1	0
Sept. 1, 1947 to Aug. 31, 1948					
Preschool	33	..	..	22	11
Public, Kindergarten to 4	45	4	26	0	15
Public, 5 to 8	7	0	0	1	6
Parochial, 1 to 4	6	0	2	3	1
Parochial, 5 to 8	2	0	0	0	2
Adult	2	..	..	1	1
Sept. 15, 1948 to June 15, 1949					
Preschool	1	..	..	1	0
Public, Kindergarten to 4	1	0	0	0	1
Public, 5 to 8	1	0	0	0	1
Parochial, Kindergarten to 4	1	0	0	0	1
Total	218	11	47	65	95
Percentage	...	5.0	21.6	29.8	43.6
Mount Kisco, Unirradiated					
Jan. 1, 1946 to Aug. 31, 1946					
Preschool	14	..	..	2	12
Public, Kindergarten to 4	9	0	1	0	8
Parochial, Kindergarten to 4	4	0	0	1	3
Sept. 1, 1946 to Aug. 31, 1947					
Preschool	4	..	..	1	3
Public, Kindergarten to 4	3	0	0	0	3
Sept. 1, 1947 to Aug. 31, 1948					
Preschool	30	..	..	26	24
Public, Kindergarten to 4	67	3	44	2	18
Public, 5 to 8	2	0	0	1	1
Parochial, Kindergarten to 4	47	2	27	5	13
Parochial, 5 to 8	3	0	0	3	0
Adult	2	..	..	1	1
Sept. 1, 1948 to June 15, 1949					
Preschool	8	..	..	3	5
Public, Kindergarten to 4	1	0	0	0	1
Parochial, Kindergarten to 4	8	0	3	2	3
Parochial, 5 to 8	4	1	1	0	2
Adult	2	..	..	0	2
Total	228	6	76	47	99
Percentage	...	2.6	33.3	20.6	43.4

The susceptibility of the kindergarten to grade 4 group of the parochial school fell from 65.0 to 15.5 per cent. Susceptibility of all children of this group in Mount Kisco fell from 52.3 to 35.2 per cent, a fall indicating a threshold susceptibility of about 44 per cent for this group during May and June.

Repeated exposures to chickenpox of Pleasantville children failed to start an epidemic, as was to be expected from the low susceptibility, regardless of any benefits from air disinfection.

2. Sept. 1, 1946 to Aug. 31, 1947: The second year of the project was notable only for a small outbreak of measles in the Pleasantville parochial school. When the Sunday schools were equipped with ultraviolet lights, it was realized that there was no equivalent of this grouping in the Catholic Church and that to cover the younger children lights should be placed in the church itself. However, it was impossible at that time to obtain permission to do this.

On March 18, 1947 a third grade pupil of the school contracted measles. Fifteen cases developed, apparently secondary to this case. Two things seemed odd about the secondary cases. First, although 8 of the 15 children with secondary cases were in the patient's classroom, 7 were in the first and second grades, sharing a different classroom; this suggested that the infections had been contracted elsewhere than the classroom. Second, of the 37 susceptible children in these two classrooms, 25 lived in the village of Pleasantville and 12 in adjacent villages. These villages each have a separate church but are served by one school. Yet every one of the 15 children with secondary cases lived within the village. Investigation revealed that during the entire month of March the Pleasantville children had been

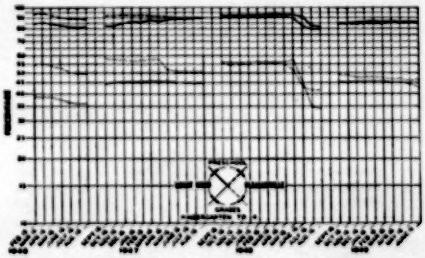

Fig. 1.—Percentage of susceptibility to measles estimated monthly from Feb. 15, 1946 to June 15, 1949.

practicing in the unirradiated church for the Easter services (April 6) and for the first communion (April 13, 1947). Out of town children, who attended churches in their own villages, did not participate in these church practice periods but remained in one room of the irradiated school. Even in later cases, only 2 out of town children contracted measles.

The most dramatic episode of the study is the fact that these cases did not initiate dynamic spread within Pleasantville, although the susceptibility of the kindergarten to grade 4 group was, when the outbreak was over, still over 50 per cent and that of the preschool group 90 per cent.

3. Sept. 1, 1947 to Aug. 31, 1948: The third year of the study was marked by the only failure of the ultraviolet lights to prevent dynamic spread within Pleasantville. At the beginning of the year the villages were equally susceptible to measles—56.1 and 56.2 per cent of the kindergarten to grade 4 groups, 90.5 and 92.1 per cent of the preschool children in Pleasantville and Mount Kisco reporting no previous attack. By analogy to the experience with chickenpox in Mount Kisco, this percentage seemed more than high enough to support an epidemic.

In January a Pleasantville child exposed a first grade, 20 of whose pupils were susceptible, without a further

case. A second case occurred March 15, again without initiating spread. The disease was once more introduced in the middle of April. A few random cases followed for two exposures, then flared into an explosive epidemic, with 59 cases in May and 44 in June. These cases are summarized in table 2. Of the year's total of 115 cases, 22 children were exposed in irradiated classrooms during May and June, the only serious breakdown of the effectiveness of ultraviolet lights during the course of the study. Ultraviolet rays are known to be minimally effective in air of high relative humidity (above 60 per cent saturation). Since the Weather Bureau reported that May 1948 was the wettest month since 1908 in New York City, this seemed a logical explanation of the outbreak. The susceptibility of the kindergarten to grade 4 group of Pleasantville fell from 55.0 per cent on April 15 to 43.0 per cent on June 15, indicating a threshold susceptibility for the group of slightly under 50 per cent during May and June with the lights known to be working inefficiently.

Not a case of measles occurred in Mount Kisco from October 1947 until May 8, 1948. In spite of this seasonally late introduction, an explosive outbreak followed. Twenty-three cases in May, 103 in June and

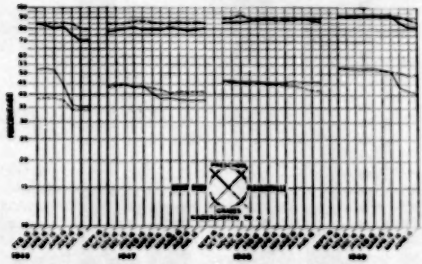

Fig. 2.—Percentage of susceptibility to chickenpox estimated monthly from Feb. 15, 1946 to June 15, 1949.

42 in July made this the sharpest epidemic we have experienced. Of the 171 cases for the year, 114 (66.7 per cent) were in the kindergarten to grade 4 group and 109 (63.7 per cent) in the kindergarten, grade 1 and grade 2. Seventy-one of the 114 cases in the kindergarten to grade 4 children were due to classroom exposure. Between May 15 and July 15 the susceptibility of this group fell from 57.1 to 34.8 per cent, a threshold susceptibility in May and June of about 45 per cent, a figure close to the percentage estimated for chickenpox during the same months.[6]

4. Sept. 1, 1948 to June 15, 1949: The fourth winter of the project witnessed a most successful demonstration of the power of radiant disinfection to prevent dynamic spread. Two villages, Thornwood to the south and Chappaqua, situated between Pleasantville and Mount Kisco, had been added to the study as additional controls. All three control villages had severe epidemics of chickenpox, while Pleasantville remained relatively free. There were 25 cases in Pleasantville, 113 in Mount Kisco, 174 in Chappaqua and 52 in the much smaller village of Thornwood.

The declines in susceptibility of the kindergarten to grade 4 groups were: Pleasantville, 53.0 to 49.9 per cent; Mount Kisco 53.7 to 40.8 per cent; Chappaqua, 44.6 to 22.3 per cent, and Thornwood, 43.8 to 30.9 per cent. Although Pleasantville was surrounded by the

TABLE 3.—*Total Cases of Chickenpox by Groups, with Presumptive Sources Indicated*

Age Group	Number of Cases	Exposed in: Home and Classroom	Exposed in: Classroom, not Home	Exposed in: Home, not Classroom	Not Home, not Classroom
Pleasantville, Irradiated					
Jan. 1, 1946 to Aug. 31, 1946					
Preschool	11	..	..	7	4
Public, Kindergarten to 4	14	1	8	2	3
Public, 5 to 8	1	0	0	1	0
Public, 9 to 12	1	0	0	0	1
Parochial, 1 to 4	2	0	0	0	2
Sept. 1, 1946 to Aug. 31, 1947					
Preschool	9	..	..	8	1
Public, Kindergarten to 4	7	0	2	2	3
Public, 5 to 8	2	0	0	2	0
Public, 9 to 12	2	0	0	0	2
Adult	2	0	0	0	2
Sept. 1, 1947 to Aug. 31, 1948					
Preschool	8	..	..	5	3
Public, Kindergarten to 4	16	2	3	4	7
Public, 5 to 8	3	0	0	2	1
Public, 9 to 12	1	0	0	1	0
Sept. 1, 1948 to June 15, 1949					
Preschool	10	0	0	3	7
Public, Kindergarten to 4	6	0	0	2	4
Public, 5 to 8	2	0	0	1	1
Public, 9 to 12	2	0	0	1	1
Parochial, Kindergarten to 4	2	0	0	0	2
Adult	2	0	0	1	1
Total	104	3	13	43	45
Percentage	...	2.9	12.5	41.3	43.3
Mount Kisco, Unirradiated					
Jan. 1, 1946 to Aug. 31, 1946					
Preschool	34	..	..	25	9
Public, Kindergarten to 4	9	0	3	1	5
Public, 5 to 8	2	0	0	0	2
Public, 9 to 12	2	0	0	1	1
Parochial, Kindergarten to 4	61	7	37	4	13
Parochial, 5 to 8	11	1	4	2	4
Adult	2	..	..	2	0
Sept. 1, 1946 to Aug. 31, 1947					
Preschool	18	..	..	11	7
Public, Kindergarten to 4	32	1	16	4	11
Public, 5 to 8	2	0	0	1	1
Sept. 1, 1947 to Aug. 31, 1948					
Preschool	7	..	..	0	7
Public, Kindergarten to 4	3	0	0	0	3
Parochial, Kindergarten to 4	2	0	1	0	1
Sept. 1, 1948 to June 15, 1949					
Preschool	33	..	..	30	23
Public, Kindergarten to 4	11	0	3	2	6
Public, 5 to 8	4	0	0	0	4
Parochial, Kindergarten to 4	47	2	34	7	4
Parochial, 5 to 8	2	0	1	1	0
Adult	1	..	..	1	0
Total	286	11	99	87	101
Percentage	...	3.7	33.2	29.2	33.9

epidemic area and although 11 of the 25 children with chickenpox attended school in the infective stage of the disease (5 of them on the day of onset), the village did not have a dynamic epidemic and no threshold can be estimated. The threshold susceptibility in Mount Kisco was about 47 per cent, a figure somewhat higher than was estimated in the 1946 epidemic. The susceptibility of the kindergarten to grade 4 group in Chappaqua fell

6. The epidemic of measles in Mount Kisco followed closely an even more explosive outbreak of rubella (German measles), most of the latter cases occurring in March and April. Pleasantville escaped this epidemic, presumably because of the earlier introduction when indoor air was dried by artificial heat. Since the beginning of the study, cases of rubella have numbered:

	Pleasantville	Mount Kisco
Jan. 1, 1946 to Aug. 31, 1946	7	26
Sept. 1, 1946 to Aug. 31, 1947	3	1
Sept. 1, 1947 to Aug. 31, 1948	12	169
Sept. 1, 1948 to Aug. 31, 1949	34	41

to 22.3 per cent, the lowest susceptibility we have ever encountered for this group.

Sources of Cases.—Special attention has been directed toward the atmospheres in which children became infected and to the children who introduced infection into these atmospheres. These data are summarized in tables 4 and 5 and in figure 3.

TABLE 4.—*Sources of Home Exposures*

		Source of Home Exposure			
	Number	Preschool	Kindergarten to 4	5 to 12	Adult
	Home-Exposed Cases of Measles				
Irradiated village					
Pleasantville					
Preschool	59	10	28	1	0
Kindergarten to 4	31	0	21	4	0
5 to 12	4	1	3	0	0
Adult	2	0	2	0	0
Total	76	17	54	5	0
Unirradiated village					
Mount Kisco					
Preschool	37	5	27	0	0
Kindergarten to 4	15	1	13	1	0
5 to 12	5	0	4	1	0
Adult	1	0	1	0	0
Total	58	6	45	2	0
	Home-Exposed Cases of Chickenpox				
Irradiated village					
Pleasantville					
Preschool	21	0	13	0	4
Kindergarten to 4	13	1	9	2	0
5 to 12	9	0	8	1	0
Adult	1	1	0	0	0
Total	44	2	30	4	4
Unirradiated village					
Mount Kisco					
Preschool	45	6	29	1	0
Kindergarten to 4	21	2	19	2	0
5 to 12	6	0	6	0	0
Adult	3	0	2	1	0
Total	58	8	86	4	0

TABLE 5.—*Relative Hazard of Infection in Home and School by Age Groups*

Group	Number of Cases*	Percentage of Total	Infected in Homes		Infected in School	
			No.	%	No.	%
Pleasantville						
Preschool	125	38.9	62	49.6	..	....
Kindergarten to 4	151	47.0	30	19.9	30	20.1
5 to 12	39	12.1	13	33.3	1	2.6
Adult	6	1.9	3	50.0	..	....
Total	321	....	108	33.6	60	18.7
Mount Kisco						
Preschool	198	35.7	98	52.1	..	....
Kindergarten to 4	260	56.9	20	7.7	160	56.5
5 to 12	32	6.1	9	28.1	6	18.8
Adult	7	1.3	4	57.1	..	....
Total	526	....	134	25.5	175	33.3

* Measles and chickenpox cases combined.

1. Atmospheres in Which Infection Spread from Child to Child: In order to evaluate the engineering efficiency of the installations in the particular rooms in which the lights were placed, exposures of children in classrooms (i. e., coattendance with a child within forty-eight hours of the clinical onset of his disease) and the resulting secondary cases have been used as an index. The repeated introductions of measles and chickenpox into Pleasantville during the colder months and the repeated exposure of highly susceptible classes without initiating dynamic spread gives assurance that disinfection of school atmospheres is adequate when the air is relatively dry. From Jan. 1, 1946 to June 15, 1949 only 12 children contracted measles or chickenpox in irradiated classrooms during the months September through April, though 79 children were infected in the unirradiated classrooms of Mount Kisco during those months.

The explosive outbreak of measles in Pleasantville during the unprecedentedly wet months of May and June, 1948, confirmed previous reports as to the relative impotence of ultraviolet rays acting in air of high relative humidity (above 60 per cent saturation). Since the epidemic in Mount Kisco began several weeks later, when natural ventilation was more nearly of a summer type, and since it was more explosive, some beneficial effect of the ultraviolet lights in Pleasantville may still be inferred. During the three and one-half years covered by this report 48 children contracted measles and chickenpox in the irradiated classrooms of Pleasantville during the months of May and June, four times as many as in the months from September to April. In Mount Kisco 96 children were infected in unirradiated classrooms during May and June, 1.2 times as many as in the September to April periods.

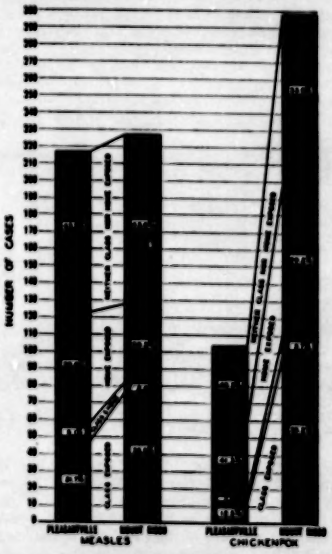

Fig. 3.—Source of cases of measles and chickenpox.

Homes were the only places known to be numerically important in the exchange of infection which were purposefully left unirradiated. In Pleasantville 30.0 per cent of children contracting measles and 41.3 per cent of those contracting chickenpox had been exposed to someone, usually a brother or sister, living in their home. In Mount Kisco, 20.6 per cent of those with measles and 29.2 per cent of those with chickenpox had been so exposed (tables 2 and 3). Homes were

especially important in exposures of preschool children; half of the preschool children who were infected were exposed at home, as were also half of the few adults who contracted measles or chickenpox. These figures do not include children exposed to visitors in their homes or those exposed while visiting in the homes of other children.

These home-exposed cases have, in table 4, been classified according to the age group of the child and according to the group to which the child who introduced the infection into the home belonged. Of 273 cases of measles and chickenpox contracted in homes, 215 (78.8 per cent) were secondary to infections of children of the kindergarten to grade 4 group. These children were the predominant source of infection whether the secondary cases were in preschool children, other kindergarten to grade 4 children, older children or even adults. This is to say, an older child or adult who has passed through this kindergarten to grade 4 age stratum without becoming infected is more likely to be infected in the home than in any other one place, and the infection is more likely to be secondary to that of a child in the kindergarten to grade 4 group than to infection of any other person. In fact, homes have been greatest single source of infection of those in all groups except the kindergarten to grade 4 group, in which children are normally most apt to contract their infections in school (table 5).

2. Children Who Carried Infection from Atmosphere to Atmosphere: The age group 0 to 9 years has in both Pleasantville and Mount Kisco contributed most of the cases of measles and chickenpox. Slightly over one third of the cases have been in preschool children. In Pleasantville 51.2 per cent and in Mount Kisco 60.3 per cent of the cases occurred in the kindergarten to grade 4 group. However, these percentages by no means indicate the relative epidemic potential of the two groups. Preschool cases have been rather a backwash of the dynamic flow of infection maintained by the kindergarten to grade 4 group: (1) the incidence curves of the preschool children follow the curves of the kindergarten to grade 4 group by several weeks (chart 1 and 2); (2) although only 19.9 per cent of the kindergarten to grade 4 group of Pleasantville and 7.7 per cent of this group in Mount Kisco contracted their infection in the home, 49.6 per cent of the preschool children in Pleasantville and 52.1 per cent of those in Mount Kisco were infected there, 83.5 per cent of the latter cases being secondary to infection of a child in the kindergarten to grade 4 group, and (3) nearly 80 per cent of all cases in children exposed at home, to whatever age group they themselves belonged, were secondary to infection of children in the kindergarten to grade 4 group.

3. Introductions of Infection from Without the Villages: From tables 2 and 3 it will be seen that between one third and one half of the cases of both villages were contracted neither in homes nor in classrooms. The question arises, were these cases contracted within the villages, thus pointing the way to additional atmospheres to be irradiated, or were they contracted outside the villages? In about 50 cases there was a history of known exposure out of the village in which the child lived; other cases occurred at a time when no other cases were known in the home village of the child. One further point should be noted, the more epidemic concentration of the Mount Kisco cases, the greater spread of the Pleasantville cases. This is true of measles, to which Pleasantville was initially highly susceptible and Mount Kisco relatively immune, and of chickenpox, to which the susceptibilities were almost exactly reversed. Thus the highest number of cases in any one month in Pleasantville was in May 1948, when 59 cases of measles occurred, 27.2 per cent of total cases; in Mount Kisco the highest number in any one month was in June 1948, when 103 cases occurred, 45.2 per cent of the total. The highest number of cases of chickenpox in Pleasantville was in June 1946, when 14 cases occurred, 13.5 per cent of the total. In May 1946, 77 cases of chickenpox occurred in Mount Kisco, 25.8 per cent of the total. Such a distribution of chickenpox in Pleasantville might be attributed to the initial low susceptibility, but this distribution of measles cases in a village which had for nearly four years maintained a high susceptibility in the face of repeated introductions and episodes is a direct reversal of the expected. This is to say, cases in Mount Kisco have been largely concentrated in dynamic epidemics focused in the schools; in Pleasantville one dynamic epidemic occurring at a time of low efficiency of the ultraviolet lights interrupted a pattern of repeated introductions that had caused few or no secondary cases and a dying out of the infection, a static type of infection unable to maintain itself within a highly susceptible community.

COMMENT

The following pertinent facts were disclosed during the three and a half years of the Westchester Study.

1. In the locations where they are placed, the ultraviolet lights are effectively disinfecting the indoor air during the colder months when artificial heat lowers the relative humidity. Disinfection has once proved ineffective, though in the wettest month in forty years.

2. Although a large percentage of the cases in both villages represented infection occurring in homes, with regard to the traffic of contagion homes were "dead end," representing a large but static element in the dissemination of infection.

3. The kindergarten to grade 4 group has constituted the dynamic potential of both villages. To whatever extent measles and chickenpox have spread epidemically within the villages, this group has made it possible.

4. Preschool children, by contrast, do not maintain the dynamic flow of infection through a community, in spite of their high susceptibility as a group and the fact that over one third of the cases occurred in this group.

5. Although dynamic spread has been successfully prevented in Pleasantville from September through April, there has been a constant leveling of differences in disease incidence in the two villages by a higher proportion of introductions of infection into Pleasantville than into Mount Kisco, the former acting as a barrier interposed between the latter and the reservoir of infection to the south.

CONCLUSIONS

The Westchester Study has presented a contrast, not of spread of infection within two villages, one irradiated and one not, but of one village, Pleasantville, protected from dynamic spread within by irradiation of shared atmospheres but subject to bombardment of infection from surrounding villages with subthreshold ventilation, and another village, Mount Kisco, subject to dynamic spread within but protected to some extent from introductions by the interposition of an irradiated barrier between it and the reservoir of infection to the south.

In a continuing program the objective will be to center in one village (1) the prevention of dynamic spread which has been effected in Pleasantville during the colder months and (2) the spacing out of introductions of infection by an irradiated barrier between the test village and the reservoir of infection, as was unintentionally done in Mount Kisco. The less frequent the introductions of infection, the smaller the chance that one will occur during the brief periods of high relative humidity of indoor air and curtailed ventilation.

Specifically this will be attempted by enlarging the irradiated area to include several villages, the more southerly acting as barriers to introductions of infection and all villages in the irradiated area being protected from dynamic spread within. More extensive coverage of groups within the irradiated villages is not planned because it is unnecessary during the colder months and because it would be impractical to maintain intensities of ultraviolet light throughout the year to insure protection during the potential breakdowns of late spring and early autumn.

Hope of the practicality of radiant disinfection of air as a general sanitary measure in ventilation lies in the fact that its extension proceeds with the law of increasing returns.

FATALITIES FOLLOWING CURARE

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The use of curare in clinical medicine has become widespread. It has become especially useful in anesthesiology for augmenting relaxation during surgical operations and in psychiatry for softening the convulsions of shock therapy. Up to the present time a few scattered reports of fatalities following the use of curare have appeared in the literature. In some of these fatalities the administrator has been at fault in that proper artificial respiration was not employed after respiratory arrest. Writers have stressed the dangers of apnea subsequent to curarization and have emphasized the methods of prevention. However, some of the deaths following the use of curare may be due to a side action of the drug and may not be preventable by present methods of treatment. In this type of accident artificial respiration with a good airway and other resuscitative measures are carried out correctly to no avail. This paper will report 3 fatalities and 1 near fatality following the use of curare in anesthesia and will summarize similar cases from the recent literature.

REPORT OF CASES

CASE 1.—A woman, aged 56, who had hypertension underwent an operation for the relief of partial intestinal obstruction due to adhesions.[1] She received morphine sulfate ⅙ grain (10 mg.) and atropine 1/150 grain (0.4 mg.) as premedication. The induction and maintenance of anesthesia were with cyclopropane, with the endotracheal absorption technic. A moderate amount of ether was administered for five minutes after induction. After the operation commenced 3 cc. (60 units) of purified Chondodendron tomentosum extract (intocostrin®)[2] was administered. Within a three minute period the respirations ceased, and artificial respiration was started. The operation consisted of lysis of intestinal adhesions and was finished in one and one-half hours. The patient at this time had a good color; the pulse was strong, with a rate of 84 per minute, and the blood pressure was 160 systolic and 90 diastolic. Artificial ventilation was carried out with oxygen for eight hours.. Throughout the day, despite intravenous fluid therapy with saline solution and plasma, there was a gradual deterioration in the circulation. It was necessary to maintain vigorous artificial respiration with pure oxygen to prevent arterial anoxemia.

Some resistance to inflation of the lungs was experienced throughout the entire period of artificial ventilation, but at one time it became extremely difficult to inflate the lungs. Bronchial rales were heard on auscultation, but mucus could not be aspirated from the trachea. Accordingly 1 cc. of epinephrine solution was given intravenously. Immediately it became easier to inflate the lungs, and the bronchial rales disappeared. But this effect was only transitory, and soon pulmonary inflation required as much force as it had before the administration of epinephrine.

At autopsy the patient had bilateral pulmonary collapse without evidence of tracheobronchial obstruction. The history and physical observations did not offer any evidence of myasthenia gravis, which contraindicates use of curare. No completely satisfactory explanation for the prolonged curarization and the massive pulmonary collapse could be made, but it was considered that in some manner they were most probably related to the administration of curare.

CASE 2.—(This case was reported in *Lancet*, September 1946.[3]) A woman aged 70 was admitted to the hospital two days after the onset of symptoms of acute appendicitis. An hour after receiving morphine sulfate ¼ grain and atropine 1/100 grain (0.6 mg.) she was anesthetized with thiopental sodium (pentothal sodium®) 1 Gm. and was given purified Chondodendron tomentosum extract 9 cc. (180 units). Oxygen was administered during the operation, which revealed an acutely inflamed but unruptured appendix with much induration of the surrounding tissues and a small adjacent collection of pus. The appendix was removed, the pus mopped out and the wound closed. The first alarming signs, cyanosis and shallow respiration, appeared at the end of the operation, which had taken forty-three minutes. The patient recovered somewhat with administration of oxygen and carbon dioxide, but she relapsed and, despite the injection of 1 cc. of a 25 per cent solution of nikethamide and parahydroxyphenyl-isopropylmethylamine (veritol) 1 cc., died thirty-five minutes later. Necropsy confirmed the presence of early peritonitis, which was most pronounced in the right iliac fossa. The left lung was almost completely collapsed, and there was considerable collapse of the posterior halves of the right upper and lower lobes. The lungs showed pronounced terminal congestion. The heart muscle was a little friable. The kidneys were healthy. Early toxic changes were seen in the spleen and liver. The pathologist considered that death was due to toxemia and had been accelerated by respiratory failure due to curare.

With a good airway, as seems to have been present, and with oxygen the patient should have been able to eliminate the anesthetic agents to detoxify the curare in time.. Death appeared to be related not so much to the management of the anesthetized period as it was to some side action of curare.

CASE 3.—(This case was reported by Dr. John Gillies of Edinborough in a discussion on curare in the Royal Society of Medicine.[4]) The patient, aged 8 weeks, had vomited repeatedly since three days after birth and was in poor condition. At operation pyloric hypertrophy was not found, but there were adhesions

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1. Foregger, R.; Rettig, H., and Conroy, C.: Massive Pulmonary Collapse Following Anesthesia with Curare, Wisconsin M. J. 48:1004 (Nov.) 1949.

2. Each cubic centimeter of intocostrin® contains an amount of purified Chondodendron tomentosum extract equivalent to 20 units. The potency of curare is presently measured by the "head-drop" bioassay in rabbits and is expressed in terms of a unit equivalent in physiologic activity to 0.15 mg. of *d*-tubocurarine chloride. To estimate dosage in units, 1 cc. = 20 units = 3 mg.

(Footnote 2 continued in next column)

There is confusion in the literature with regard to the expression of curare dosage, especially of intocostrin.® One unit was stated in earlier publications to be equal to 1 mg. of standard drug (crude curare); however, 1 unit is equivalent to only 0.15 mg. (20 units to 3 mg.) of pure crystalline *d*-tubocurarine chloride. Throughout this paper, when the number of milligrams given by the authors (footnotes 8, 9, 11, 12 and 13) refers to the standard drug and is equivalent to the number of units of physiologic activity, the dosage has been expressed as units. Curare is a dangerous drug, and those who administer it should be aware of the danger and be guided by the dosage limitations and supplementary instructions which may be listed by the manufacturer and which are outlined in New and Nonofficial Remedies.

3. Annotation: Death After Curare, Lancet 2:424 (Sept. 21) 1946.

4. Discussion on Further Experiences with Curare, Proc. Roy. Soc. Med. 40:593 (Aug.) 1947.

extending from the second part of the duodenum to the liver and lateral portion of the abdominal wall. Separation of the adhesions proved difficult, and, since kinking of the duodenum still persisted, a posterior gastroenterostomy was performed. The intravenous administration of *d*-tubocurarine chloride was continued slowly until a total of 5 mg. (33⅓ units) had been given. A profound effect of total paralysis of muscles, including the diaphragm, was achieved.

Throughout the operation, which lasted forty-five minutes, controlled ventilation of the lungs with oxygen was continued. Good oxygenation was maintained as evidenced by the color of the intestine. The pulse, visible in the mesenteric vessels, was regular and the rate was steady at 110 per minute. Thirty minutes after closure of the abdomen spontaneous contractions of the diaphragm started, but the administration of oxygen by compression of the breathing bag was continued because pulmonary exchange was still inadequate. On two occasions when the mask was removed from the patient's face remarkable slowing of the pulse rate occurred. On reapplication of the mask the pulse rate was restored.

On the third occasion when this sequence of events was demonstrated, inflation of the lung was difficult and the heart stopped. Postmortem examination showed collapse of both lungs, which presented the appearance of fetal lungs and which did not float. This case is of particular interest because no other agents were administered. The accident may then more clearly be attributed to *d*-tubocurarine chloride.

It is pertinent that in the same meeting at which this case was reported the opening discussant stated that "anesthetic deaths due to purified Chondodendron tomentosum extract and *d*-tubocurarine have been reported, but postmortem findings have been published in only 1 case. In 2 cases death occurred several hours after the injection and in both of them there was massive pulmonary collapse."

CASE 4.—(This case was reported by Riggs and Schlomer in *Diseases of the Nervous System*.[5]) Mrs. J. A., a white widow aged 53, suffering from manic depressive psychosis, was to receive electroshock therapy. Physical examination disclosed moderate obesity, a systolic murmur at the cardiac base and hypertension with a systolic blood pressure of 170 mm. of mercury. She had received electroshock therapy four times previously. After the fourth shock treatment she was found to have a fracture of the distal part of the humerus. The use of curare (purified Chondodendron tomentosum extract) was planned for the fifth treatment. The patient was extremely agitated before treatment and expressed the conviction that the process would prove fatal. She received 45 units of the curare preparation in two minutes and forty seconds. At this moment injection was discontinued because respiratory efforts became feeble and ineffective, deep cyanosis appeared and there seemed to be some degree of obstruction to the airway. The patient thrashed violently about for a few seconds. Veins had collapsed, and an attempt to inject neostigmine methylsulfate intravenously was unsuccessful. She was placed in the prone position, where artificial respiration was observed to be mechanically effective although the cyanosis was unrelieved. In addition she was pulseless. Two minutes later artificial respiration was interrupted long enough to make an intracardiac injection of 1 cc. of neostigmine methylsulfate in a 1:1,000 dilution accompanied with 25 per cent solution of nikethamide intramuscularly. Four minutes after this the heart beat was not audible, and more nikethamide was injected into the heart. After a further five minute period of artificial respiration, during which there was no change in her condition, she was given a second intracardiac injection of neostigmine methylsulfate, accompanied with alphalobeline intramuscularly. Artificial respiration was continued for a total of thirty minutes. At this time efforts were abandoned, since the heart beat had not returned.

A complete postmortem examination was singularly unrevealing. There were no signs to suggest myasthenia gravis. Riggs and Schlomer ascribed death to cardiac failure of obscure origin because of the sudden cardiovascular collapse following the intravenous injection of curare. In the same paper they described 2 other patients exhibiting severe untoward reactions to curare and electroshock therapy.

CASE 5.—(The following case is abstracted from a full report given by Dr. Duncan Holaday [his case 198] in *Anesthesiology*.[6]) The patient was a Negro woman aged 44 with mild hypertension, who was to have a fibromyomatous uterus removed. Premedication was with morphine sulfate ¼ grain (15 mg.) and scopolamine hydrobromide 1/200 grain (0.3 mg.). Anesthesia was induced with nitrous oxide and maintained with nitrous oxide and cyclopropane. Sixty units of curare (purified Chondodendron tomentosum extract) were given intravenously. Twenty units of the agent given ten minutes later failed to affect the respiration. However, fifteen minutes after this second dose, coincident with exploration of the abdomen, the respirations became shallow and jerky. Artificial ventilation was started as the respiratory exchange became inadequate to maintain oxygenation. There was some resistance to ventilation; therefore a third dose of 20 units of curare was given intravenously five minutes later. Apnea became complete. Artificial ventilation was continued for an hour before adequate spontaneous respirations returned. The cyclopropane had been withdrawn after the onset of apnea. A final injection of 20 units of curare was given intravenously to facilitate closure of the peritoneum. The patient again became apneic, and artificial ventilation was resumed. Since the diaphragm still remained paralyzed after completion of the operation, 1 cc. of a 1:2,000 dilution of neostigmine methylsulfate was given and the dose repeated after ten minutes. Manual compression of the breathing bag was continued. Slow, shallow, jerky respiratory movements reappeared shortly but were of inadequate force to ventilate the lungs properly. During the operation the blood pressure remained 170 mm. of mercury systolic and 110 mm. of mercury diastolic and the pulse rate persisted at 92 beats per minute. Thirty minutes after the operation, the pulse became rapid and thready and the blood pressure was unobtainable. The pupils dilated. Nikethamide solution, 25 per cent, and caffeine and sodium benzoate were injected intravenously, but the patient failed to respond. The operation was a supravaginal hysterectomy lasting an hour and fifty-five minutes. No organic lesions were found at autopsy that might have been responsible for the death.

Holaday considered that the fatal outcome might have been a result of irreversible changes in the central nervous system which occurred during a period of anoxia that escaped the attention of the anesthetist or that it might have been the result of an unusual reaction to curare.

CASE 6.—(The following case was submitted by Dr. Frank S. Yordy, Milwaukee.) An obese white man 48 years of age was to undergo an operation for refusion of the lumbar vertebrae. He had had several previous surgical operations following an initial operation for removal of protruded intervertebral disk. Eight months previous to the present operation he had had an attack of jaundice thought to be due to an injection of homologous serum. Preanesthetic medication consisted of morphine sulfate ¼ grain and atropine 1/150 grain one hour before induction of anesthesia. Directly before the induction of anesthesia the blood pressure was 120 mm. of mercury systolic and 75 mm. of mercury diastolic and the pulse rate per minute was 82. Induction of anesthesia was performed with 0.5 Gm. thiopental sodium in 5 per cent solution followed by 12 mg. (80 units) of *d*-tubocurarine chloride. Oral endotracheal intubation was then performed without difficulty. A gauze pack was inserted into the throat around the endotracheal tube in an attempt to effect a gas-tight circuit. A mixture of nitrous oxide and oxygen was administered by means of the absorption technic, using a flow rate of 1,000 cc. of nitrous oxide per minute and 500 cc. of oxygen per minute. The excess gas flow was used to overcome leaks in the system. After this the patient was placed in the prone position and the table was flexed. Pillows were placed beneath the shoulders and hips to allow for adequate pulmonary ventilation. The operation commenced twenty minutes after the induction of anesthesia. The blood pressure at this time was 120 systolic and 75 diastolic, and the pulse rate was 100 per minute. The patient's color was good. Shortly after the beginning of the operation he received an additional 1.5 mg. (10 units) of *d*-tubocurarine chloride and 150 mg. of thiopental sodium. A transfusion of 500 cc. of blood was started. Manual

5. Riggs, B. C., and Schlomer, G. M.: Hazards of Curarization Before Electroshock, Dis. Nerv. System 8:382 (Dec.) 1947.

6. Holaday, D. A.: Nitrous Oxide-Cyclopropane-Curare Anesthesia: A Review of Two Hundred Cases, Anesthesiology 7:426 (July) 1946.

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compression of the breathing bag was used to augment the respirations, which had become shallow. Cyanosis began to appear. The pulse rate steadily increased until it became uncountable. The blood pressure gradually decreased until it, too, became unobtainable. Blood transfusion therapy was continued in order to combat the circulatory depression. The patient received 1,500 cc. of whole blood, but there did not appear to be that much blood loss. In addition 40 mg. of methamphetamine was infused along with the blood. Manual augmentation of breathing was increased. Anesthesia at this time was maintained with a small amount of ether in a high oxygen concentration. At this time it was also noted that there was resistance to pulmonary inflation. Cyanosis was now evident despite inflation of the lungs with nearly 100 per cent oxygen. Spontaneous respirations ceased eighty-five minutes after the beginning of anesthesia. The operation was finished, the patient was turned into the supine position, and artificial respiration with 100 per cent oxygen was continued for an additional fifty minutes, at which time he expired. It was noted that resistance to lung inflation increased throughout and was not relieved when he was turned back to the supine position. An autopsy performed within twenty hours showed massive atelectasis of the right and left lungs without evidence of bronchial obstruction.

CASE 7.—(The following case was submitted by Dr. Wilson Phillips, Milwaukee.) A white man aged 36 was to undergo operation for the relief of acute intestinal obstruction. He was receiving continuous intragastric suction in order to relieve distention and vomiting, which had been increasing over a ten day period. Roentgen examination before operation showed an opacity in the epigastrium believed to be a tumorous mass. Preanesthetic medication consisted of morphine sulfate ½₂ grain (5 mg.) and scopolamine ½₂₀ grain, one and one-half hours before operation. Induction of anesthesia was done at 10 a. m. with cyclopropane and oxygen. Oral endotracheal intubation was performed, anesthesia was changed to ether for maintenance, and the operation commenced at 10:20 a. m. At operation numerous masses varying in size from 0.5 to 2 cm. were found throughout the peritoneal surfaces of the abdomen. A large mass was attached to the transverse mesocolon, apparently causing obstruction at the transverse colon. In the belief that this was carcinomatosis a short-circuiting colocolostomy between the ascending colon and descending colon was performed; this required one and one-half hours. During this time the blood pressure varied between 130 systolic and 70 diastolic and 150 systolic and 80 diastolic, with a pulse rate of 100 to 110 per minute. Respirations were jerky and about 30 per minute. Anesthesia was maintained in the lower second plane but was deepened to the fourth plane in order to perform the abdominal closure. Manual assistance to respiration was employed in order to insure adequate ventilation. Despite these attempts to produce adequate relaxation, difficulty was experienced in the peritoneal closure because of protrusion of distended bowel. Accordingly 1 cc. (3 mg.) of *d*-tubocurarine chloride (20 units) was given. This did not materially aid in the closure, which was finally performed with through and through interrupted sutures. After the administration of *d*-tubocurarine chloride a mottled cyanosis of shoulders, head and upper extremities was noticed. When the skin was compressed the capillary refill time was delayed. The blood pressure remained constant. The anesthesia was lightened and maintained with high oxygen concentration in order to overcome cyanosis. During this time an increasing resistance to inflation of the lung was noted. A suction catheter passed through the endotracheal tube met with no obstruction, and there was no mucus in the respiratory tract. Artificial respiration with oxygen was continued for one and one-half hours after the end of the operation, at which time the patient died. Prior to death he gave one large gasp, subsequent to which the blood pressure suddenly failed and the pupils dilated.

Postmortem examination revealed atelectasis of the left lung and atelectasis of one half of the right lung. There was no obstruction in the air passages. The abdomen contained many necrotic nodules and abscesses due to acute pancreatitis.

CASE 8.—(The following report was submitted by Dr. R. Anthony Tella, Milwaukee.) A male physician aged 32 underwent an exploratory laparotomy under endotracheal ether anesthesia, absorption technic. During the course of the operation, which required an hour, he received 3 cc. (60 units) of *d*-tubocurarine chloride in divided doses. Anesthesia was uneventful. At the end of the operation he reacted on the endotracheal tube, which was removed, but it was thought that the reflexes should have been more active, considering the amount of anesthetic agent which had been used. He was returned to the ward, and during this time it was noticed that the respirations were becoming shallow and that cyanosis was beginning to appear. The pulse became thready. He was placed in bed, oxygen was given by mask, and endotracheal intubation was performed, but with difficulty because the jaws were clenched tightly. The color of the skin did not improve immediately with oxygen and manual artificial ventilation. After an hour and a half of artificial ventilation the cyanosis began to disappear. Soon the patient reacted on the endotracheal tube and began to awaken. At the end of two hours the cyanosis had disappeared, and manual augmentation of breathing was discontinued.

The literature contains references to several fatalities and near fatalities associated with administration of curare despite adequate artificial respiration. Some of these will be referred to briefly.

Salan and Carmichael[7] describe a patient in whom respiration ceased after the intravenous administration of purified Chondodendron tomentosum extract and the subsequent electroshock convulsion. Artificial respiration was continued for ninety minutes, but normal respiration and cardiac action could not be maintained. Postmortem examination failed to reveal anything unusual, and it was believed that this was a death from respiratory paralysis due to treatment with curare.

Altschule and Tillotson[8] described 2 patients who received curare intravenously followed by electric shock. They exhibited wheezing, labored respirations, bradycardia or asystole and cardiac arrhythmia. One patient died and showed pulmonary edema, atelectasis and cerebral edema. The authors concluded that the reaction occurring after the injection of curare and the administration of electric shock was vagus in origin. Since electroshock is not without its complications, this must also be considered as a possible cause of the deaths.

Charlton, Brinegar and Holloway[9] reported a sudden death following shock therapy with curare and pentylenetetrazole (metrazol®). Four cubic centimeters (80 units) of a preparation of curare (purified Chondodendron tomentosum extract) was given intravenously in a little over a minute. The convulsion was induced one and one-half minutes later by intravenous injection of 5 cc. of 10 per cent pentylenetetrazole. Respirations ceased shortly after the convulsion. Immediately artificial respiration with oxygen by mask was begun and maintained continuously. The pulse was a good volume at a rate of 80 per minute for about nine minutes and then rapidly began to fail. Within fifteen minutes of the beginning of the treatment the patient was dead. Charlton and associates stated "Our patient's heart action was apparently good for about nine minutes after spontaneous respirations had ceased, and, although other possibilities cannot be entirely eliminated, it is our opinion that he died of respiratory failure due to curare poisoning."

Beard and Harris[10] reported a case in which the patient received 45 units of curare intravenously followed by unconsciousness, rapid and shallow respira-

7. Salan, I., and Carmichael, D. M.: Hazards of Curare, J. A. M. A. **138**: 205 (Sept. 18) 1948.
8. Altschule, M. D., and Tillotson, K. J.: Untoward Reactions to Curare Consequent to Vagal Hyperactivity Following Electroshock Convulsions, Arch. Neurol. & Psychiat. **60**: 392 (Oct.) 1948.
9. Charlton, G. E.; Brinegar, W. C., and Holloway, O. R.: Curare and Metrazol Therapy of Psychoses, Arch. Neurol. & Psychiat. **48**: 267 (Aug.) 1942.
10. Beard, B. H., and Harris, T. H.: A Near Fatality from Curare Preceding Electro-Shock Therapy, Dis. Nerv. System **71**: 276 (Sept.) 1946.

tions and cyanosis. Electroshock therapy was not given, but the patient had convulsions twice after receiving curare. Respirations ceased within ten minutes after injection of the drug. Artificial respiration with endotracheal oxygen was performed until spontaneous respirations returned after three hours. Six hours after the onset of the episode the only remaining evidence of this severe reaction to curare was partial atelectasis of the lower lobe of the left lung. Careful review of the history and physical observations eliminated myasthenia gravis as a possible diagnosis.

Gray and Halton [11] described a patient who had respiratory arrest for one hundred and sixty-five minutes after 15 mg. (100 units) of *d*-tubocurarine chloride was given to permit bronchoscopy. Respirations returned, but blood-stained fluid which he regurgitated from the stomach was aspirated into the lung, and he subsequently died. They considered this a case of hypersensitivity to curare. In the same paper they described another case of hypersensitivity to curare which was not fatal.

Silverberg and Ansbro [12] described a patient (their case 15) who received intravenously 100 units of curare (purified Chondodendron tomentosum extract) followed by cyanosis and convulsions. The chest was fixed, and there was no respiratory exchange. Artificial respiration was performed for two hours and fifty minutes, at which time the patient began to breathe unaided.

Wiggin, Schultz and Saunders [13] described a patient with bronchial asthma who received spinal anesthesia followed by injection of 100 units of curare (purified Chondodendron tomentosum extract) with thiopental sodium for an iliocecostomy operation. When brought back to the ward the patient was cyanotic and did not breathe, although the pulse was satisfactory. After artificial respiration was given for thirty minutes he regained spontaneous respiration, but he remained comatose and died twelve hours after operation.

Harroun, Beckert and Fisher [14] in an interesting paper on the physiologic effects of anesthetic agents pointed out the incidence of atelectasis in dogs following the use of curare. They stated that "it is of the utmost importance that anesthetists using curare be thoroughly convinced that although the diaphragm has recovered its power of contraction and the patient may be able to oxygenate himself well, he will die of atelectasis if controlled respiration is stopped before the intercostals have recovered."

Beckert, Fisher and Harroun [15] in a later communication incited by reports of 7 deaths from curare in the San Francisco area describe what they call the "typical" case history of a death from curare. "A man of 40 is sent to surgery for an elective cholecystectomy. He is put to sleep with thiopental sodium and cyclopropane and oxygen are administered. When the peritoneum is opened the patient is insufficiently relaxed. Either with or without the surgeon's knowledge, curare is administered, and immediately the relaxation becomes adequate. When the gallbladder has been removed, more curare is given to facilitate closure of the peritoneum. At the end of the operation, the patient is in good condition, well oxygenated, breathing spontaneously, with a good pulse and blood pressure. He is returned to bed. Half an hour later he is found dead. Postmortem examination shows atelectasis of both lungs." They consider that such deaths are preventable with adequate knowledge of the effects of the drug.

Apgar [16] described the case of a 4 day old infant who received intravenously 20 units of curare (purified Chondodendron tomentosum extract) for jejunojejunostomy requiring forty-five minutes. Respiration ceased immediately after the drug was given, and artificial respiration was carried out for three hours, at which time the patient died.

The American Society of Anesthesiologists' *News Letter* reports [17] on 2 patients who died after receiving *d*-tubocurarine chloride during anesthesia. In 1 case,[17a] the patient ceased breathing at the end of a lumbar sympathectomy after receiving 160 units of *d*-tubocurarine chloride and 1.5 Gm. thiopental sodium over a period of one hour and forty minutes. Artificial respiration with oxygen was instituted, but the patient died. Autopsy showed massive atelectasis of one lung. One of the corresponding commentators [18] stated the opinion that this case was a "typical" curare death and believed that the massive atelectasis was the result of intercostal paralysis from curare. Artificial respiration with oxygen in the presence of a free airway had been used. The other patient [17b] ceased breathing shortly after receiving 120 units of *d*-tubocurarine chloride and required artificial respiration with oxygen for eleven and one-half hours, after which he died. The report states that the attending surgeon considered this to be respiratory arrest due to curare.

TOXIC EFFECTS OF CURARE

Curare should not be used in myasthenia gravis. Patients with this disease are extremely sensitive to the drug and may show profound depression with small doses. Curare is thought by some to have an effect on the central nervous system. Pick and Unna [19] noted that curare produced cortical depression of the frog's brain as measured by electroencephalography. Fegler [20] stated that curare influences the respiratory center before the full development of its peripheral action. McIntyre [21] showed that curare first caused increased electroencephalographic activity in dogs followed by depression. He also believes that death following the rapid intravenous injection of *d*-tubocurarine chloride in dogs is due to a central action.[22] Ostow and Garcia [23] have shown that both purified Chondodendron tomentosum extract and *d*-tubocurarine chloride are able to block synaptic transmission in the central nervous system. Cohnberg [24] in an interesting series of experiments on small animals showed that purified Chondodendron tomentosum extract and *d*-tubocurarine chloride produced signs of central nervous system stimulation evidenced by clonic convulsions.

11. Gray, T. C., and Halton, J.: Idiosyncrasy to D-Tubocurarine Chloride, Brit. M. J. 1:784 (April 24) 1948.
12. Silverberg, J. S., and Ansbro, F. P.: An Evaluation of the Use of Curare in Endoscopy, New York State J. Med. 44:2468 (Nov. 15) 1944.
13. Wiggin, S. C.; Schultz, P. F., and Saunders, P.: Experiences with Curare in Anesthesia, New England J. Med. 239:526 (April) 1947.
14. Harroun, P.; Beckert, F. E., and Fisher, C. W.: The Physiological Effects of Curare and Its Use as an Adjunct to Anesthesia, Surg., Gynec. & Obst. 84:491 (April) 1947.
15. Beckert, F. E.; Fisher, C. W., and Harroun, P.: Standards for Safe Use of Curare, California Med. 68:401 (May) 1948.

16. Apgar, V.: Experience with Curare in Anesthesia, Ann. Surg. 124:161 (Aug.) 1946.
17. (a) Newsletter of the American Society of Anesthesiologists, Case Report no. 81, vol. 13, no. 3, p. 27, March 1949; (b) Case Report no. 85, vol. 13, no. 6, p. 23, June 1949.
18. Newsletter of the American Society of Anesthesiologists, Comments on Case Report no. 81, vol. 13, no. 5, p. 34, May 1949.
19. Pick, E. P., and Unna, K.: The Effect of Curare and Curare-Like Substances on the Central Nervous System, J. Pharmacol. & Exper. Therap. 82:59, 1945.
20. Fegler, J.: The Action of Curare on the Respiratory Centre, J. Physiol. 100:417 (March) 1942.
21. McIntyre, A. R.: Curare, Chicago, University of Chicago Press, 1947, p. 174.
22. McIntyre,[21] p. 131.
23. Ostow, M., and Garcia, F.: Effect of Curare on Cortical Responses Evolved by Afferent Stimulation, J. Neurophysiol. 12:225 (July) 1949.
24. Cohnberg, R. E.: Stimulation of the Central Nervous System by Curare (Intocostrin), J. Lab. & Clin. Med. 31:866 (Aug.) 1946.

Central nervous system depressants, amobarbital sodium and cyclopropane decreased or abolished convulsions due to purified Chondodendron tomentosum extract. The convulsions occurred in the presence of artificial respiration with oxygen.

On the other hand, Girden [25] recently offered data to support the view that the electroencephalogram is undisturbed in curarized mammals. Scott Smith [26] failed to find an anesthetic action of *d*-tubocurarine chloride when he received injections with large amounts of the drug. The effect of curare alkaloids on the central nervous system is therefore a controversial matter.

It has been known for many years that curare will produce bronchoconstriction.[27] Massive pulmonary collapse has been noted in both animals and man [28] following the administration of curare. The action of *d*-tubocurarine and curarine on the respiration was studied by Ranyard West.[28a,b] Curarine caused the lungs of guinea pigs to retract, to decrease the amplitude of their movements and to blanch. The lungs appeared to lose their elasticity, and they consistently required an increased pressure to produce adequate ventilation. These appearances were assumed to indicate that curare causes a bronchial spasm. Epinephrine caused the lungs to reexpand immediately and to become pink. The effect, however, was only transitory. Postmortem examination of the lungs of curarized dogs [28a] showed a remarkable degree of general collapse. The lungs appeared almost airless but could be inflated. Curarized rabbits, killed before respiration was arrested, had collapsed, dark pink and almost airless lungs in contrast to the partly distended, light pink, air-containing lungs of a normal control animal. In conclusion West thought that the sudden failure of respiration in curarization was due to pulmonary collapse. Bronchospasm following curare administration has been noted in other investigations.[29] Landmesser [29] has demonstrated bronchospasm following curarine, purified Chondodendron tomentosum extract and *d*-tubocurarine.

The bronchospasm produced by curare is similar to that produced by histamine. It has been shown that curare liberates histamine from body tissues.[30] The bronchoconstriction of curare and histamine may be prevented by the administration of antihistaminic drugs such as tripelennamine hydrochloride or diphenhydramine hydrochloride.[31] Atelectasis following release of histamine may also be alleviated by the use of diphenhydramine.[32] The respiratory complications of curare may be relieved by intravenous administration of procaine hydrochloride, since it has been shown that procaine has antihistamimic and antiacetylcholinic properties.[33]

25. Girden, E.: The Electroencephalogram (EEG) in Curarized Mammals, J. Neurophysiol. 11:169 (May) 1948.
26. Smith, S. M.; Brown, H. O.; Toman, J. E. P., and Goodman, L. S.: The Lack of Cerebral Effects of D-Tubocurarine, Anesthesiology 8:1 (Jan.) 1947.
27. West, R.: The Action of Curarine on the Respiratory Mechanism, J. Physiol. 91:437 (Jan.) 1938.
28. (a) West, R.: The Pharmacology and Therapeutics of Curare and Its Constituents, Proc. Roy. Soc. Med. 30:565 (March) 1937. (b) West.[27] (c) Footnotes 3 and 4.
29. Landmesser, C. M.: A Study of the Bronchoconstrictor and Hypotensive Action of Curarizing Drugs, Anesthesiology 8:506 (Sept.) 1947.
30. Alam, M.; Aarep, G. V.; Barsoum, G. S.; Talaat, M., and Weninger, E.: Liberation of Histamine from the Skeletal Muscle by Curare, J. Physiol. 90:140 (Feb.) 1939.
31. Poulsen, H.: Anti Histaminica som antidot mod curarepraeparaters histaminfrigivende virkning, Nord. med. 31:627 (April 8) 1949; abstracted, J. A. M. A. 141:564 (Oct. 22) 1949. Landmesser.[29]
32. Dressel, A. C.: Lowin "97" Factor in Post-Operative Lung Complications, South African M. J. 21:790 (Oct. 25) 1947.
33. Fromagel, E.; Favre, M., and Vallette, F.: L'action anti-acétylcholinique et anti-histaminique des anesthésiques locaux (cocaïne, novocaïne, percaïne) étudiée à l'aérosol et par la méthode de la contraction de l'iléon du cobaye, Arch. internat. de pharmacodyn. et de thérap. 78:355 (Feb. 1) 1947.

SUMMARY AND CONCLUSIONS

Three fatalities considered to be due to a dangerous side action of curare are reported. The literature is partially reviewed and found to contain references to 19 fatalities following the use of curare. Several near fatalities are reported. They are likewise considered due to the side action of the drug.

The incidence of fatal reactions with curare is low; its value in medical practice assures continued usage. The observations of this brief survey suggest that further study should be made so that suitable means may be found to counteract undesirable toxic reactions when they occur. At the present time available knowledge suggests that the antihistaminic drugs and procaine may be helpful in treating the respiratory complications of curare.

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UNINTENTIONAL ABORTION IN 1,497 PLANNED PREGNANCIES

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In an earlier publication [1] the contraceptive practices of 2,000 patients seen in private practice were presented. In a subsequent paper [2] the time required for conception in 1,727 planned pregnancies was studied in detail. The case histories in the foregoing studies were obtained at the initial office visit, usually at the eighth or ninth week of pregnancy. All the patients were married residents of the Baltimore metropolitan area, over 99 per cent of them white and 3 of 5 Jewish. The majority of the husbands were professional men, business executives or other types of white collar workers. In all the cases reported in the second study [2] conception had been preceded by a period of contraception, which was discontinued to achieve pregnancy.

In this contribution we shall report the outcome of pregnancy in 1,497 women. The fetal outcome in 230 of the 1,727 pregnancies was unknown. Either the women were undelivered when the data were abstracted and coded or they had moved elsewhere before delivery. Table 1 shows that 1,364 of these 1,497 pregnancies resulted in a living child or twins that survived the neonatal period. Nine babies, although born alive, died before they left the hospital, and 19 fetuses were stillborn. The combined perinatal mortality was 20 per thousand live births. This is a low ratio compared with a national average of about 40 for the white population in 1946. However, the number of cases involved (28) is too small to warrant further statistical analysis.

One hundred and five pregnancies terminated spontaneously before the fetus had reached viability, or 1,000 Gm. Since all pregnancies in this series were consciously planned, it appears reasonable to assume that the abortions were not preceded by any mechanical manipulation or the ingestion of medicinal aborti-

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1. Guttmacher, A. F.; Tietze, C., and Rubin, S.: Contraception Among Two Thousand Private Obstetric Patients, J.A.M.A. 140:1263-1268 (Aug. 20) 1949.
2. Tietze, C.; Guttmacher, A. F., and Rubin, S.: Time Required for Conception in 1,727 Planned Pregnancies, to be published.

facients. These 105 unintentional abortions are 7.0 per cent of all the pregnancies with known outcome. Since some of the pregnancies with unknown outcome had actually been followed well beyond the twenty-eighth week but the infants had not yet been delivered when the data were abstracted, the incidence of abortion in this study is slightly overstated.

Our series does not include pregnancies terminated by abortion during the early weeks of gestation before the patients had visited the obstetrician's office to register for care. We (A. F. G. and S. R.) were only rarely called on to treat unregistered abortions. Either they are uncommon in this population—or the aborting women sought no medical aid or were attended by other practitioners.

Further information about incidence of abortion, based on the histories of 1,081 women who had been pregnant at least once prior to the current pregnancy,[1] is portrayed in table 2. Six hundred and ninety-eight of these 1,081 pregnancies followed the discontinuance of contraception, 255 were accidental, due to failure of contraception, and in 128 instances contraception had not been practiced. Table 2 shows the outcome of the pregnancies immediately preceding the current

TABLE 1.—*Distribution of 1,727 Planned Pregnancies by Outcome*

	Number	Percentage
Outcome unknown	230	13.3
Outcome known	1,497	86.7
Total	1,727	100.0
Living child	1,364	91.1
Neonatal death	9	.6
Stillbirth	19	1.3
Abortion	105	7.0
Total	1,497	100.0

one. The exceptional character of the group of 128 women whose current pregnancies were not preceded by the use of contraception is immediately apparent. Not less than 46 per cent of the last preceding pregnancies of these women had resulted in unintentional abortion and an additional 9 per cent in stillbirth or neonatal death. This shows clearly that child-spacing is the prevailing pattern in the population from which these patients are drawn. A second or subsequent pregnancy is as a rule not immediately undertaken unless the preceding one had ended in failure.

To a lesser degree this type of selection also operates between the two other groups of patients. Since couples who were unsuccessful in their effort to produce living offspring are more likely to plan an additional pregnancy than those who were successful, the true incidence of unintentional abortion in the population from which our patients were drawn should be somewhere between 7.8 and 16.0 per cent of all pregnancies. If the illegally induced abortions in table 2 are excluded, the minimum and maximum estimates for unintentional abortions increase to 8.4 and 16.7 per cent of all pregnancies terminated without interference. The difference between these estimates and the 7.0 per cent observed in our series of 1,497 pregnancies would appear to be due to the inclusion of abortions in the early weeks of pregnancy before the patients had registered with the obstetrician.

Table 3 shows that the incidence of abortion tended to increase rather steeply with the woman's age at the time contraception was discontinued, with her number of previous unintentional abortions and with the time required for impregnation after discontinuance of contraception. These observations are statistically highly significant, the odds against a chance finding being 1 to 500 or more. The correlations of incidence

TABLE 2.—*Distribution of 1,081 Second and Subsequent Pregnancies by Planning Status of Current Pregnancy and Outcome of Last Preceding Pregnancy*

Outcome of Preceding Pregnancy	Planning Status of Current Pregnancy: Contraception Not Used	Contraception Discontinued	Failure of Contraception
Number:			
Living child	55	531	211
Stillbirth or neonatal death	11	28	8
Unintentional abortion	59	112	20
Induced abortion	3	27	16
Total	128	698	255
Percentage:			
Living child	43.0	76.1	82.7
Stillbirth or neonatal death	8.6	4.0	3.1
Unintentional abortion	46.1	16.0	7.8
Induced abortion	2.3	3.9	6.3
Total	100.0	100.0	100.0

TABLE 3.—*Number of Planned Pregnancies with Known Outcome and of Abortions, and Percentage of Abortions by Age of Woman, Duration of Marriage, Pregnancy Order, History of Unintentional Abortion, Contraceptive Method Used and Time Required for Conception*

	Number of Pregnancies	Number of Abortions	Percentage of Abortions
Age of woman			
15 to 24	357	15	4.2
25 to 29	644	40	6.2
30 to 34	334	31	8.8
35 to 39	127	14	11.0
40 to 44	15	5	33.3
Duration of marriage			
Less than 3 yr.	517	29	5.6
3 to under 6 yr.	518	41	7.9
6 yr. or more	462	35	7.6
Pregnancy order			
First pregnancies	695	44	6.3
Later pregnancies	802	61	7.6
History of abortion			
No abortion	1,264	79	6.1
One abortion	139	16	10.1
Two or more abortions	44	10	22.7
Contraceptive method			
Condom	687	43	6.3
Diaphragm and jelly	611	48	7.9
Other or several	199	14	7.0
Time required for conception			
One to six months	1,187	67	5.6
More than six months	310	38	12.3
Grand total	1,497	105	7.0

Tests of Statistical Significance	χ^2	*N*	*P*
Age of woman	15.16	3	.002
Duration of marriage	2.51	2	.29
Pregnancy order	.53	1	.47
History of abortion	11.71	1	.001
Contraceptive method	1.10	2	.58
Time required for conception	14.87	1	.001

of abortion in the current pregnancy with duration of marriage, pregnancy order and the contraceptive method previously employed were not statistically significant.

In our material the age of the woman, a history of unintentional abortion and the time required for conception were all correlated. Nevertheless, it can be shown that the incidence of abortion in the current pregnancy followed each of these three variables even if the two others were kept constant and that the correlations remained statistically significant.

Women who had two of the "three strikes against them" ran a decidedly increased risk of having their current pregnancy end in abortion. The incidence of abortion was 18.9 per cent among the 37 women who were 35 years of age or older when they discontinued contraception and who also gave a history of previous unintentional abortion; 24.4 per cent among the 41 women in that age group who required more than six months to conceive, and 26.4 per cent among the 53 women (irrespective of age) with a history of abortion who took more than six months to conceive. There were only 13 women in our series with all three significant factors against them: They were 35 years of age or older, had one or more previous unintentional abortions and required more than six months for conception. Of this small group 5 (38.4 per cent) miscarried the current pregnancy.

By contrast only 9 (3.9 per cent) of the 230 women less than 25 years of age, without previous abortion, and who conceived during the first three months after discontinuance of contraception lost their current conceptus. If 351 additional women, 25 to 29 years of age, with otherwise identical histories are added, the number of abortions increases to only 27 in 581 pregnancies and the ratio to 4.6 per cent.

It is well known that unintentional abortion has a tendency to recur and that the risk of abortion is greater among older than among younger women. However, the relationship between the time required for the current conception and the likelihood of abortion has not to the best of our knowledge been previously observed. A possible explanation for the observed correlation is the assumption that the same pathologic condition or conditions which delayed conception were responsible for the abortion. Since the commonest cause of abortion appears to be defective germ plasm, it may be that this defect also retards conception.

SUMMARY

1. Among 1,497 successive patients who had abandoned contraception to achieve pregnancy fetal loss amounted to 0.6 per cent neonatal deaths, 1.3 per cent stillbirths and 7.0 per cent unintentional abortions, fetus less than 1,000 Gm.

2. The incidence of abortion was greatly increased when the woman was of advanced age, when there was a history of previous abortion and when an unduly long time was required for conception after the abandonment of contraception.

3. The unintentional abortion ratio among 230 women who were less than 25 years of age, had no previous abortion and conceived within three months was only 3.9 per cent.

4. Among 37 women who were at least 35 years of age, had a previous abortion but conceived promptly the incidence of abortion was 19 per cent.

5. Among 41 women who were 35 years of age, required more than six months for conception but had not aborted previously the incidence of abortion was 24 per cent.

6. Among 53 women (irrespective of age) with a history of unintentional abortion who required more than six months to conceive the incidence of abortion was 26 per cent.

7. Among 13 women, aged 35 or older, with the history of previous abortion, who required more than six months for conception the incidence of abortion was 38 per cent.

8. It is suggested that defective germ plasm not only is a cause of abortion but also may delay conception.

INSULOGENIC LIPODYSTROPHIES

Their Relationship to "Brittle" Diabetes and to Insulin Resistance

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Although isolated reports of the occurrence of insulogenic lipodystrophies have been appearing since 1926, the development of local areas of subcutaneous fat atrophy or of persistent hard, nodular swelling at the site of insulin injections is still generally ignored or lightly considered in most textbooks and monographs on diabetes mellitus.

In 1942 Marble and Smith [1] reviewed the literature and studied 500 unselected diabetic patients, almost one fifth of whom were found to have areas of lipoatrophy at the site of the insulin injections. After careful histologic studies and other investigations, they could prove no relationship to any of the factors involved in the administration of insulin except possibly that of repeated trauma.

In my personal experience the incidence of insulogenic lipodystrophies reaches close to 60 per cent of all diabetic patients who have been taking daily injections of insulin for periods longer than six months before coming to my attention. Two distinct types of lesions are observed, (*a*) the hypertrophic nodular type, usually but not always preceded by an inflammatory phase and the formation of hard, painless nodes with anesthesia but without other apparent changes of the overlying skin, and (*b*) the atrophic type, in which there is a gradual disappearance of the subcutaneous fat—frequently without an inflammatory phase—and a leathery and mummified appearance of the overlying skin, which also becomes anesthetic. Not infrequently the hypertrophic type undergoes gradual atrophy, with eventual change into the second type. The two types of lesions may be present in the same person.

REPORT OF CASES

The following 4 cases are representative of these two types of local lesions as well as of their probable relationship to "brittle" diabetes and to some forms of insulin resistance.

CASE 1 (*Extreme Example of Localized Lipoatrophy with Progressive "Insulin Resistance"*).—A middle-aged white woman, a known diabetic subject, had taken insulin for about twenty years and had taken daily injections of protamine zinc insulin for about ten years. When she was first instructed, she says, a nurse told her how to inject the insulin but nobody told her where to inject it. She experimented until she found that the skin of the internal aspect of the thighs, just below the groin, was soft and easy for her to inject. She never used any other area. When first seen by me, she had had years of self management, seldom having seen a physician in the meantime and with "no complaints until three years ago."

Attending Physician, Head of the Department of Endocrinology and Out Patient Diabetes Clinics, Jackson Memorial Hospital.

1. Marble, A., and Smith, R. M.: Atrophy of Subcutaneous Fat Following Injections of Insulin, Proc. Am. Diabetes A. 2:173, 1942.

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In the last three years she had increased her dose of protamine zinc insulin gradually from 20 to about 70 units daily, and she still had heavy glycosuria plus intense and increasing peripheral pains. The areas of the inside of her thighs, where she injected the insulin, were so atrophied that my closed fist could be inserted almost completely into each of these cavities. The skin was insensible, smooth, hard and strongly adherent to the underlying structures, and the fat was completely absent. By instructing the patient to diversify the location of her injections, I was able to reduce her insulin intake from 70 to 30 units daily and her diabetic neuropathy showed considerable improvement in a few weeks.

CASE 2 (*Another Example of Lipoatrophy and "Insulin Resistance"*).—A diabetic woman, aged 60, known to be diabetic for sixteen years, complained of weakness, intense progressive tiredness, pains in both legs and at the base of her neck, and inability to reduce the level of her glycosuria despite high insulin doses. Various glycemias were reported between 0.200 and 0.400 per cent, with a high renal threshold above 0.250 per cent.

Her insulin requirement had increased, particularly in the last seven years, from about 20 to 30 units to a total of 240 units in two to three depots daily. There were smoothly depressed areas of lipoatrophy on her arms, with a mummified appearance of the insensitive skin. After she was instructed in the scheme for diversification of the insulin depots, her insulin dosage was reduced to a mixture of 100 units regular insulin and 50 units protamine zinc insulin once daily before breakfast. Three weeks later, her blood sugar levels had dropped appreciably, and there had been a considerable clinical improvement, with disappearance of her peripheral pains and a new feeling of well-being, to which she was entirely unaccustomed.

CASE 3 (*"Brittle" Diabetes with Hypertrophic [Early Inflammatory Phase] and Late Atrophic Insulogenic Lipodystrophies*).—A girl 9 years of age was admitted to the Jackson Memorial Hospital with severe diabetic acidosis. She had been a known diabetic subject for over one and a half years, receiving 55 units of protamine zinc insulin daily. She had occasional hypoglycemic reactions, but tests of her urine showed heavy glycosuria. Though she responded well and recovered from coma within a few hours, her postcoma adjustment period was characterized by considerable "brittleness," with rapidly alternating phases of hyperglycemia and hypoglycemia.

The subcutaneous fat tissues at the anterioexternal aspect of both arms were almost absent. The skin was firmly adherent to the underlying structures, giving an impression of fibrosis. It was almost leathery, as if the subcutaneous fat had been replaced by a thin, scarry layer of fibrous tissue. There had been a period of inflammation, swelling and pain several months before, which had been gradually replaced by the present degree of atrophy. When the arms were no longer usable, she moved the site of her injections to the midanterior aspect of her thighs, alternating from the right to the left but always using the same oval areas of about 10 by 5 cm. Both these areas were swollen, with irregular hard nodes; they felt hot, and the skin was discolored with purple and reddish patches.

By diverting the subsequent injections of insulin to sites in unaffected areas, these two swollen and inflammed lesions subsided within the following two or three weeks. During this period, while attempts were being made at regulation by using various mixtures and various schedules for injection, her blood sugar levels oscillated widely between 0.029 and 0.315 per cent.

I believe that the exaggerated "brittleness" of this patient and the wide oscillations in her glycemia levels were due largely to difficulties of local absorption of her insulin depots and to the ulterior absorption of long-standing depots which had remained for some time unabsorbed within the areas of fibrosis subsequent to inflammation. Although this girl had been receiving an injection of insulin every day, it is probable that sometimes the injected insulin remained in situ without becoming absorbed for variable periods of time. When the breakdown process of the inflammed tissues "spilled" the insulin retained in those depots into adjoining areas, where blood circulation was better conditioned, it could be absorbed and severe hypoglycemic reactions would result.

Eventually all the inflamed areas of the thighs became reabsorbed, and this girl became fairly well adjusted after a good diversification of the sites of injection was obtained through the scheme which will be explained later.

CASE 4 (*Hypertrophic Lipodystrophy and "Brittle" Diabetes*).—A married Jewish man aged 32, known to be diabetic since the age of 22, had polyuria, polydypsia, polyphagia, decided tiredness and weakness, depressed libido and melancholia. Blood sugar levels were unpredictably variable, with glycosuria also appearing irregularly, and he complained especially that he frequently had attacks of hypoglycemia with severe reactions on the same days that urinalyses within a few hours of each other showed intense glycosuria. He had been losing weight for several months. He always injected his insulin in the same two oval areas of the anterior aspect of the thighs, about 10 by 15 cm. each. These areas showed numerous round nodes of various degrees of hardness, without inflammation, pain, tenderness or discoloration.

After he was instructed in the diversification of the insulin depots and the avoidance of those affected areas, in one week he gained 3 pounds (1.3 Kg.); his urine had been normal with few exceptions for five days, and he felt "like an entirely new person." His well-being, strength and weight kept improving while all previous complaints faded away. Five weeks of treatment resulted in a gain of 9 pounds (4.1 Kg.) while the insulin dosage was reduced to a mixture of 36 units regular insulin and 18 units protamine zinc insulin (fig. 3).

COMMENT

Most of these patients have spider angiomas and telangiomas, decreased vibratory sense perception, paresthesias, hypoalbuminemia, hypercholesteremia and various other indications of defective hepatic function. Diabetic neuropathy is also a frequent complication.

Not all diabetic subjects seem to be susceptible to localized insulin lipodystrophies. But only those who repeat their injections frequently in the same areas seem capable of showing this peculiar reaction. My impression is that Marble and Smith's "repeated trauma" is an important etiologic factor, together with some personal factor, perhaps related to the chemistry of allergic phenomena through some metabolic disorder of the liver, which may some day be proved to have an important part in the pathogenesis of insulin lipodystrophies.

At any rate, it is obvious that the neglect of a single detail in the instruction of these patients has made a great difference in their lives. Had they been well instructed initially to continuously diversify the location of the insulin injection, they might have been able to avoid "repeated trauma" and subsequent local lipodystrophies.

The difficulty caused by these lesions in the absorption of the insulin depots may become a serious handicap in diabetic management by increasing the amount of insulin required for adjustment and also by favoring the incidence of severe hypoglycemic reactions. It may be a major cause of so-called "insulin resistance" or of diabetic "brittleness" in at least some patients with severe lipodystrophies. Insulin resistance appears to be most frequent in atrophic lipodystrophies, from continuously impaired absorption, while "brittleness" is more frequent in the hypertrophic-nodular type, in which absorption is irregular and in which the delayed absorption from one or more depots may at times be added to the current dose, with severe alternations of hyperglycemia and hypoglycemia.

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TREATMENT AND PREVENTION

The only treatment possible for these insulogenic lipodystrophies is to leave them alone.[1a] If the areas are spared long enough, the hypertrophic nodes tend to disappear and the atrophic areas may fill up again after several months. In the Out Patient Diabetic Clinic of the Department of Endocrinology at Jackson Memorial Hospital in Miami, all members of the house staff are usually taught to instruct patients according to the "6 by 8" scheme for distribution of insulin depots, as illustrated in figures 1 and 2.

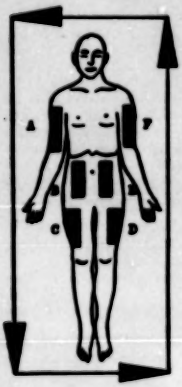

Figure 1

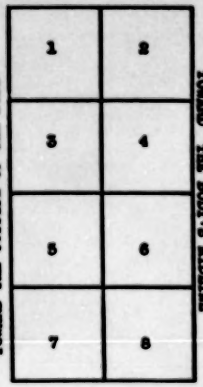

Figure 2

Fig. 1.—The anteroexternal aspects of arms and thighs and both flanks are marked *A* through *F* counterclockwise, following the direction of the arrows. Each of the six areas is a vertical rectangle about 3 by 6 inches (7.6 by 15.2 cm.), which may be subdivided into eight zones, as shown in figure 2.

Fig. 2.—Each injectable area is divided into eight zones, each approximately 1½ by 2 inches (3.8 by 5 cm.). These are numbered 1 through 8, from the upper-outer through the inner-lower corner of the rectangle, with odd numbers toward the outside and the even numbers proximal to the body's midline. By injecting the insulin into zone 1 of each consecutive area from *A* through *F*, then into zone 2 of each of the six areas, and so on, an interval of seven weeks (forty-nine days) will elapse between two injections within any of these zones. With the injection trauma so widely spaced, local irritation and lipodystrophies are avoided.

Figure 1 shows how the anteroexternal aspects of both arms, thighs and abdominal flanks are marked counterclockwise *A* to *F*, starting on the right arm and ending at the left arm. Figure 2 shows how each of these six areas may be subdivided into eight zones, approximately 1½ by 2 inches (3.8 by 5 cm.) each for a total of forty-eight different injectable zones. By using zone 1 consecutively and counterclockwise in areas *A* through *F* and then zone 2 through the same cycle the patient saves his subcutaneous tissues from repeated irritation, for it takes seven weeks (forty-nine days) to return to the same zone for a second injection within a square 1 to 2 inches in size.

This "6 by 8" scheme, or variations of it, have been in use in my clinics and private practice for the past twenty years, and I attribute the lack of insulogenic lipodystrophy among my older patients to the stress placed on the part of the patient's instruction.

Because I consider the psychologic impact of the first hour of instruction of tremendous importance in the life of a person who has just been told that he or she has diabetes mellitus, I have always taken it on myself to personally give this first period of instruction whenever practicable. If a patient requires insulin, I always make it a point to have the patient himself take the first one or two injections under my guidance. In order to promote ambidextrous handling of the syringe, the patient injects the first depot in zone 1 at the right upper arm (area *A*), handling the syringe with his left hand—with a little help from mine. By stretching the skin of the area to be injected, with the ulnar edge of the hand, while the syringe is held, pen or pencil fashion, and thrust by one quick motion of the wrist, the injection is not difficult and is painless. I like to use a ½ inch (1.27 cm.) needle, gage 27, with Huber point, and a syringe of the type approved by the American Diabetes Association for insulin of 80 units per cubic centimeter; the syringe is engraved with green markings, the same color as the cap and lettering on the label of 80 unit insulin container.[2]

1949 4/27	(800-PEI) 65	4/			4/	6a 5/18/49 Wt.max 128#
28	65	3/			4/	
29	65	3/			4/	
30	65	3/	4/		3/	
5/1	65	30+0.800/ 4/	3/			6a 129#, start 10 unit depots, using "old" scheme
2	80 - 1/2			Trace	4/	
3	80 - 1/0	Trace	Trace	0	Trace	
4	80 - 1/C	0	0	0		3134 reactions; 5:15 0 6:30 AM
5	80 - 1/D	0	0	0	0	B. at 6:00 AM
6	80 - 1/E	0	0	4/		Ate extra cereal and ovalt. 0 70
7	80 - 1/F	4/	3/	Trace	3/	
8	80 - 2/2	Tr.	0			Wt. 131 #
9	80 - 2/D	Tr.	3/	3/	4/	
10	80 - 2/C	0	0	0	0	B. at 8 AM
11	80 - 2/D	0		0	0	B. at 8 AM B. at 6 AM
12	80 - 2/E	0		0	0	B. at 8 AM B. at 6:15 AM
20	[illegible]	30+0.800/ 30+0.800/				
21	80 3/4/0	0	0	0	Tr.	Yesterday's Wt. 131.5 #
5/1	80 3/4/0	0	Tr.	0	0	
2	80 3/4/0	0		0	0	
3	80 3/4/0	0		0	0	
4	80 3/4/0	0		0		
5	80 3/4/0	0		0	0	Wt. 137 #

Fig. 3.—During the period of adjustment patients keep records on these forms. This record, from case 4, illustrates the effect of diversifying the sites of injection. During the control period from May 19 through July 1, the patient continued to lose weight and excrete sugar heavily, despite careful and adequate diet and increase in dosage from 60 to 65 units of protamine zinc insulin. Two days after he started the "6 by 8" scheme for diversification of insulin depots, his urine specimens were sugar free and there was decided clinical improvement; however, insulin reactions appeared regularly on a lower dose of protamine zinc insulin. By July 11 it was obvious that the dose should have been reduced further, but the patient did not report until July 29. His weight was up 6½ pounds (3 Kg.), and his postprandial blood sugar level was low. He was placed on a 2: 1 mixture, two parts regular insulin to one part protamine zinc insulin, and the total number of units was reduced 10 per cent. He continued sugar free, without reactions and in excellent clinical condition. All blood sugar levels are determined ninety minutes after breakfast, all urine tests are made before meals.

1a. After this paper was submitted for publication, Colleus and associates claimed success in the treatment of seven patients with insulin lipoatrophy by the repeated injection into the depressed areas of the daily insulin doses (Colleus, W. S.; Boas, I. C.; Zilinsky, J. D., and Greenwald, J. J.: Lipoatrophy Following the Injection of Insulin: New England J. Med. 242:610 [Oct. 20] 1949). Every one of the patients in my own experience had been injecting their daily insulin doses into their areas of lipodystrophy of either the atrophic or the hypertrophic nodular types. The lesions in these subjects appeared and became gradually worse under that routine and did not improve until the affected areas were put to rest by transfer of the injection depots.

2. I never use insulin of any lower concentration. (I regret that insulins are not uniformly marketed at concentrations of 50 and 100 units per cubic centimeter, which would make unnecessary the use of special "insulin syringes." Any tuberculin-type syringe with graduation at each 0.01 of a cubic centimeter then would be adequate for most patients.)

After the first one or two injections have been administered by the patient himself in the office, he is told to continue using zone 1 on each of the following areas from *B* through *F* on the first cycle until it is completed counterclockwise. Then a new cycle is started, using zone 2 and going from area *A* to area *F*, and so on.

Until the patient has been satisfactorily adjusted, he tests his urine with clinitest® three or four times daily, either before or after meals, depending on his renal threshold. Records are kept on a simple form (fig. 3), on which a column for insulin shows the amounts taken and also helps to keep track of the injection sites demonstrated in figure 2.

SUMMARY

1. Insulin lipodystrophies are a frequent complication of insulin injections. No definite etiologic factor is known, but it seems probable that they are due to repeated trauma at the site of the injections of insulin in suceptible persons, plus a personal factor, probably related to the chemistry of allergy and to metabolic disorders of hepatic function.

2. Four cases of insulin lipodystrophy are reported, in two of which the patients had only atrophic lesions and in the other two, lesions in hypertrophic and/or inflammatory stages, one of these with atrophic areas elsewhere. In both types of cases insulin requirements seemed to have increased after the development of the local lesions, and local changes seemed to have interfered with absorption of the insulin.

3. "Insulin resistance" may be due in some instances to insulogenic lipodystrophies of the atrophic type interfering with the continuous absorption of insulin from each depot injected.

4. Hyperglycemia and glycosuria may also occur when some insulin remains unabsorbed for a certain period of time in the hypertrophic nodular type of insulogenic lipodystrophies, while various degrees of irregularly appearing hypoglycemic reactions may be induced when the eventual irregular absorption of such delayed depots adds the effect of a previously administered dose to that of the currently administered dose. This would seem to be the mechanism of production of some cases of so-called "brittle" diabetes.

5. Systematic diversification of the site of insulin injections as a routine part of the patient's initial training has been successful in (*a*) preventing the occurrence of insulin lipodystrophies, (*b*) correcting instances of "insulin resistance" and of "brittle" diabetes in cases in which insulin lipodystrophies were present and (*c*) allowing for eventual repair of the affected areas of lipodystrophy.

6. The "6 by 8" scheme described in this paper has proved to be an easy method for instructing diabetic patients and impressing them with the importance of continuous systematic selection of insulin injection sites in order to prevent the occurrence of insulogenic lipodystrophies.

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Membership in Medical Societies.—For the advancement of his profession, a physician should affiliate with medical societies and contribute of his time, energy and means so that these societies may represent the ideals of the profession.—Section 2, Chapter III, of the PRINCIPLES OF MEDICAL ETHICS of the American Medical Association.

INFLUENCE OF LOWER EXTREMITY AMPUTATION ON STANCE MECHANICS

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In 1947 the Committee on Artificial Limbs of the National Research Council [1] estimated the incidence of major extremity amputations at 40,000 annually. Thus rehabilitation of the amputee is an important medical problem, and much is being done to improve prosthetic appliances and develop better technics of training the amputee in the functional use of such devices. To date little or no attention has been directed at the biomechanical effect of replacing the anatomic part lost with an artificial limb weighing less than the extremity amputated. This condition holds in the majority of the prosthetic devices now available on the open market. The purpose of this study was to explore this problem as it affects the lower extremity amputee.

CLINICAL MATERIAL AND METHODS

The subjects of the investigation were 42 adults, 24 of whom were lower extremity amputees. Of these, 3 had sustained bilateral lesions, 8 had lost one extremity below the knee and 13 were unilateral thigh amputees. Two of the bilateral amputations were of the above-knee type, and the other involved only the legs. Control observations were made on 18 normal healthy adults, male and female, representing a variety of body builds.

1. *Determining the Height of the Center of Gravity.*—The method used in determining the height of the center of gravity was a modification of that described by Hellebrandt and others [2] in 1938. The equipment consists of a balance board suspended in stable equilibrium. A sliding weight permits the subject, when lying in a supine position with the soles of the shoes resting against the footboard, to be balanced rapidly and accurately. When one has determined the weight of the subject, the weight necessary to balance the system and the distance of the balancing weight from the fulcrum, the linear relation of the center of gravity is determined by equating moments. Maximum error in determining the height of the center of gravity was 0.25 per cent.

Mr. Corbett Reedy, Mr. E. S. Snead, Miss Powhatan Stone and Dr. Josephine J. Buchanan, the State Division of Vocational Rehabilitation; Dr. Walter Jerome Lee, McGuire Veterans Administration Hospital, and Mr. Marvin Pollard, limb manufacturer, aided this study by the referral of amputees. Miss Susanne Hirt, technical director of the Physical Therapy School of the Baruch Center of Physical Medicine of the Medical College of Virginia, made students available for study. Roentgenograms were made by Dr. F. R. Mandeville. Mr. Melvin C. Shaffer gave photographic assistance.

From the Division of Clinical Research, Baruch Center of Physical Medicine and Rehabilitation, Medical College of Virginia. This study was supported in part by a grant in aid of research from the Committee on Scientific Research, American Medical Association. A preliminary report was read at the Annual Conference of the American Physical Therapy Association in Boston, June 23, 1949 (Mueller, E. E., and Summers, I. M.: Lower Extremity Amputation: Its Effect on the Location of the Center of Gravity of the Body as a Whole, on Postural Alignment and on Stance Stability, Phys. Therapy Rev. 29:434-459 [Oct.] 1949).

1. Terminal Research Reports on Artificial Limbs, Committee on Artificial Limbs of the National Research Council, Washington, D. C. (June 30) 1947.

2. Hellebrandt, F. A.; Tepper, R. H.; Braun, G. L., and Elliott, M. C.: Location of the Cardinal Anatomical Orientation Planes Passing Through the Center of Weight in Adult Women, Am. J. Physiol. 121: 465-470 (Feb.) 1938.

2. *Locating the Center of Gravity in the Vertical Orientation Planes.*—The subject stands on the uppermost of a series of platforms constructed to affect, concurrently, two scales placed horizontally at right angles to each other. The scales are equipped with auxiliary levers to convert changes in spring tension into vertical movements which may be recorded on a kymograph. Thus every shift in the location of the center of gravity is simultaneously indicated in terms of its anteroposterior and transverse components. The latter were also compounded by a cathode ray oscilloscope to obtain a two dimensional record of the shifting center of gravity. To obtain the mean position of the center of gravity during known intervals of standing, secondary coils were suspended from the scale levers in the air gap of slotted-core transformers energized by a constant source of alternating current and connected to the current coil of standard watt-hour meters. When the voltage on the potential coils of the meters is kept constant, the rate of rotation of each watt meter element is a function of the subject's partial weight. Thus, the watt-hour meters integrate fluctuations in partial weight and yield an average value from which the mean position of the center of gravity may be computed. The maximal error in localizing the center of gravity by the methods described was 1.52 per cent in the transverse vertical plane and 2.56 per cent in the anteroposterior plane.

Mean Influence of Lower Extremity Amputation on the Height of the Center of Gravity Reported as a Percentage of the Total Height of the Subject

	Without Prosthesis				With Prosthesis			
	Male		Female		Male		Female	
Physical Status*	No.	%	No.	%	No.	%	No.	%
Normal.....	8	56.00	10	55.01	..	.....	..	.....
UBKA.....	6	59.81	1	58.50	6	57.98	1	58.00
BBKA.....	1	61.20	..	.....	1	59.50	..	.....
UAKA.....	11	61.29	2	59.75	9	58.94	2	58.15
BAKA.....	2	66.85	..	.....	2	62.35	..	.....

* The letters UBKA denote unilateral below-knee amputation; BBKA, bilateral below-knee amputation; UAKA, unilateral above-knee amputation, and BAKA, bilateral above-knee amputation.

3. *Recording Postural Alinement.*—A rough approximation of the distribution of the parts of the body as a whole about the center of weight was obtained with the use of a schematograph. By relating known points on the center of gravity platform to the schematogram, the mean vertical projection of the center of gravity could be introduced into the posture picture as an experimentally determined weight line.

PROCEDURE

All observations were made with the subjects wearing shoes. The height of the center of gravity was determined in recumbency with and without prosthetic correction. The mean location of the center of gravity and stance stability were studied with the subject in the vertical posture during three observational periods: sixty seconds of relaxed and comfortable standing with the eyes open, sixty seconds with the eyes closed and five minutes with the eyes again open. A rest pause usually was interposed between the first two periods and the last period of observation. An interval of five minutes was selected arbitrarily as a stress sufficient to elicit instability related to adverse biomechanical factors.

To standardize the foot position an adjustable guide was used. The heels were separated by a small block, and the toes were turned out sufficiently to equalize the anteroposterior and transverse diameters of support. This placement of the feet had been suggested by Morton [3] as the most stable position for standing. An outline of the foot position was traced on paper. The location of the head of the first metatarsal and the position of the foot in the shoe were obtained from roentgenograms made in the standing posture. The location of the center of gravity was evaluated by comparison with the geometric center of the supporting base.

RESULTS AND THEIR SIGNIFICANCE

1. *General Information Affecting Interpretation of the Data.*—The average age of the experimental subjects was 38 with a range from 19 to 63 years. The amputees averaged 68.38 inches (173.7 cm.) in height and 150¾ pounds (68.3 Kg.) in weight in comparison with the normal controls, who were taller and lighter, that is, 69.11 inches (175.54 cm.) and 135 pounds (61.2 Kg.). Twenty-one of the 24 amputees used their prostheses regularly. Three had been wearing a prosthetic appliance for six months or less. The average time during which a prosthesis had been worn was 7.2 years. One subject had worn the same artificial limb for thirteen years. The average age of the prosthesis worn at the time of the experimental observations was two years. One-half the subjects had received no training in posture or gait. Sixteen per cent of the remaining subjects had less than two weeks of training. Twelve of the amputees were regularly employed, and 2 were housewives.

The heaviest prosthesis worn was approximately 10 per cent of the body weight of a unilateral above-knee amputee. The mean weight of the various types of appliances worn by the experimental subjects was as follows: bilateral above-knee prostheses, 16.06 pounds (7.3 Kg.); bilateral below-knee prostheses 13.75 pounds (6.2 Kg.); left above-knee prosthesis, 10.2 pounds (4.6 Kg.); right above-knee prosthesis, 10.54 pounds (4.8 Kg.); left below-knee prosthesis, 6.83 pounds (3.1 Kg.), and right below-knee prosthesis, 7.09 pounds (3.2 Kg.).

2. *Height of the Center of Gravity.*—The influence of lower extremity amputation on the height of the center of gravity is summarized in the accompanying table.

The average height of the center of gravity of men is slightly above that of women. The normal values obtained in this series of experiments are in close agreement with those of Hellebrandt and co-workers [2] and other earlier investigators.[4] Amputation of a portion of the lower extremity elevates the center of gravity and the magnitude of the shift is determined by the site of the lesion. The application of a prosthetic

3. Morton, D. J.: The Human Foot: Its Evolution, Physiology and Functional Disorders, New York, Columbia University Press, 1935.

4. Creahey, M. I.; Dawson, P. M.; Lurssen, A. C.; Marsha, I. E., and Wright, H. E.: The Height of the Center of Gravity in Man, Am. J. Physiol. 61:171-185 (June) 1922. Cotton, F. S.: Studies in the Centre of Gravity Changes: A New Method for Finding the Height of the Centre of Gravity in Man, with Some Application, Australian J. Exper. Biol. & M. Sc. 8:53-67 (March) 1931.

appliance lowers the center of gravity but fails to compensate wholly for the loss in weight. In only one subject, a female unilateral below-knee amputee, did the center of gravity fall within the limits of normal variation. In all others it remained outside the maximal range. The results are graphically summarized in figure 1.

3. *Postural Stability.*—The most difficult problem confronting the amputee is one of balance. From a physical point of view, stability in standing is dependent on the height of the center of gravity and the size of the supporting base. Postural stability was reduced to a numerical value by measuring the area encompassed by the vertical projection of the points of maximum shift in the center of gravity during a fixed and constant period of standing. This was expressed as a percentage of the total area of underpropping. The mean area of the base utilized in the maximal shifting of the center of gravity was equal to only 0.66 per cent of the functional base in the normal controls, disregarding the toes, which do not participate in standing, and 0.36 per cent in the amputees.

Despite the fact that included in the mean data were those amputees who had had limited use of their prosthesis, the postural instability of these handicapped persons was only 54 per cent as great as that of the vigorous and healthy controls. The extreme steadiness of the amputee in standing is a notable

Fig. 1.—Diagrammatic representation of the influence of lower extremity amputation on the height of the center of gravity and the compensatory effect of the prosthetic appliance.

achievement, demonstrating the magnitude of the compensatory powers of the machinery of the living body. In spite of significant gaps in the configuration of the somesthetic stance pattern, the amputee fitted with a prosthetic appliance has the capacity to maintain effective postural balance to a degree which supersedes normal.

Postural sway increased in all subjects when the eyes were closed. This may be taken as presumptive evidence of the importance of retinal stimulation to the reflex contraction of the antigravity extensors. The average percentage increase in the above-knee amputee group was greater than that of the normal persons, and the difference was significant at the 1 per cent level of confidence. Not only was there an increase in the range of sway but there was also an increase in the frequency of the oscillations. There was a tendency for all unilateral amputees to rely more on the normal leg when the eyes were closed. As a whole, the unilateral below-knee amputee showed no significant increase in sway on closure of the eyes. There was no evidence of a significantly increased instability in the bilateral below-knee amputee, and the increase in sway for the bilateral above-knee amputee was slight when considered in relation to the severity of his handicap. However, this patient did report that he had difficulty walking in the dark.

In general, there was little or no increase in postural sway with extension of the period of standing to five minutes. However, 2 subjects with unilateral thigh amputation demonstrated an increasing shift in the

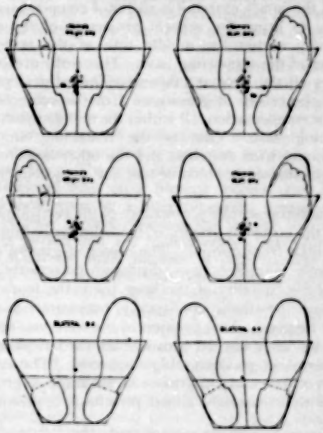

Fig. 2.—Comparison of the vertical projection of the center of gravity of the amputee with the normal subject (BK denotes below-knee amputation and AK, above-knee amputation).

position of the center of gravity toward the normal leg as the duration of standing was prolonged. Furthermore, the two bilateral above-knee amputees also shifted

Fig. 3.—Photographs illustrating compensatory changes in alinement in a unilateral above-knee amputee.

gradually toward the leg which was slightly longer. The bilateral below-knee amputation shifted away from the prosthetic appliance which caused some discomfort.

4. *Vertical Projection of the Center of Gravity into the Supporting Base.*—The observations on the vertical projection of the center of gravity into the supporting base are summarized in figure 2. Although the majority of the unilateral amputees shifted the weight slightly toward the intact extremity, all but 4 compensated sufficiently to bring the vertical projection of the center of gravity within the middle fifth of the transverse diameter of the supporting base. This is the area which includes all the normal subjects. The vertical projection of the center of gravity of 2 of the subjects with aberrant compensation fell within the middle third of the supporting base. One of the remaining amputees walked only with crutches, and the other amputee had a new prosthesis to which he had not yet become accustomed.

The anteroposterior eccentricity of the vertical projection of the center of gravity of the below-knee amputees varied little from normal. The center of gravity of the above-knee amputees was displaced posteriorly. To increase the stability of the knee joint, the foot of the above-knee prosthetic appliance is maintained in slight plantar flexion.[5] This position of the foot may account for the tendency toward unusual backward displacement of the center of gravity in thigh amputees. The average location of the center of gravity of the amputee properly fitted with a correctly alined prosthesis approximates

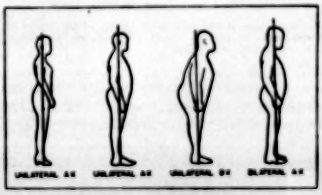

Fig. 4.—Side view schematograms showing sagittal plane variations in alinement and the location of the experimentally determined weight line. (BK denotes below-knee amputation and AK, above-knee amputation).

normal to a remarkable degree. Those amputees who were dissatisfied with their prosthesis because of insecurity or discomfort were the subjects who stood with the center of gravity displaced significantly toward the normal extremity.

5. *Postural Alinement.*—Some of the compensatory variations in posture autonomously made by the amputee in order to maintain the center of weight over the middle of the supporting base are illustrated in figure 3. The lateral shift of the trunk toward the side of the amputation causes a curvature of the spine, for it is here that the major compensatory changes take place. The weight deficit in a subject wearing a prosthetic appliance lighter than the limb that was amputated must be compensated for in some way. This is usually achieved by adjustments of the vertebral column.

An amputee experiences his greatest insecurity at the knee joint. This insecurity reaches its peak in the bilateral above-knee amputee. To prevent knee flexion, the weight of the superimposed parts must be adjusted in a manner which permits the gravity line to fall well anterior to the axis of rotation of the knee joint. The anteroposterior schematograms, reproduced in figure 4, show some of the postural adjustments made to keep the knees from buckling.

Obvious compensatory adjustments tend also to occur in the dorsolumbar region of the spine. The normal tendency of gravity to tip the pelvis may be augmented by the wearing of a pelvic band. The upper part of the trunk is then shifted posteriorly to keep the center of gravity over the ischial seat.[6] The adjustments which occur are largely automatic, although balance may demand cortical control when the amputee first attempts standing and locomotion. Gaps in the total configuration of the sensory pattern appear to be replaced quickly by a compensatory development of new controls. Teuber and associates[7] recently demonstrated an adaptive increase in the acuity of two point discrimination in the region of the stump, as compared with that in symmetrically disposed parts of the contralateral normal thigh.

SUMMARY AND CONCLUSION

The effect of lower extremity amputation on the location of the center of gravity, postural alinement and stance stability was studied on 24 unselected subjects. The accumulated evidence supports the following conclusions:

1. Lower extremity amputation significantly elevates the height of the center of gravity.

2. Prosthetic appliances compensate in part, but not in whole, for this displacement.

3. The majority of amputees maintain the vertical projection of the center of gravity within the middle fifth of the transverse diameter of support and remarkably close to the geometric center of the base.

4. Postural realinement is necessary to relocate the center of gravity over the middle of the supporting base and should be considered a physiologic adaptation essential to efficient use of the prosthetic appliance.

5. The principal realinement of the unilateral amputee occurs in the transverse vertical plane, as evidenced by a high incidence of compensatory scoliosis.

6. The major anteroposterior adjustment made by both unilateral and bilateral amputees is increased tilting of the pelvis and lumbar lordosis.

7. Improper alinement of the prosthetic appliance, inequalities in leg length and discomfort are reflected in malposition of the center of weight.

8. Postural stability of the lower extremity amputee not only equals but supersedes that of normal young adult subjects when the eyes remain open.

9. Reflex postural adjustments mediated by retinal simulation are significantly more important to the amputee than to normal subjects.

10. Improper fitting or inadequate training in the use of lower extremity prosthetic devices augments the disabling effects of the handicap by introducing mechanically disadvantageous compensatory adjustments.

5. Thomas, A.: Anatomical and Physiological Considerations in Alignment and Fitting of Amputation Prosthesis for the Lower Extremity, J. Bone & Joint Surg. 49:645-659 (Oct.) 1944.

6. Burnanstrom, S.: Walking Training of the Amputee: Biomechanical Considerations, Physiotherapy Rev. 27:147-151 (May-June) 1947.

7. Teuber, H.; Krieger, H. P., and Bender, M. B.: Reorganization of Sensory Function in Amputation Stumps: Two-Point Discrimination, Federation Proc. 8:136 (March) 1949.

Special Article

INCOME TAX DISCRIMINATION AGAINST THE PROFESSIONS

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Under Section 165(*a*) and related sections of the 1942 Federal Internal Revenue Code, funds used by companies for the purpose of providing employees with pensions or shares in profit-sharing trusts are deductible from gross receipts as business expenses and thus are not a taxable part of the employer's or company's income, if the particular plan is approved by the Bureau. These funds do not become a taxable part of the recipient's income until they are actually received, either when the recipient retires or when he cashes in on his profit-sharing account—at which time he will presumably be in a lower income bracket. Since the provisions of Section 165(*a*) and related sections are restricted to employees, professional men who can qualify as employees—for example, company lawyers and company physicians—can receive the benefits of these pensions and profit-sharing trusts, while those who conduct their professions as single proprietorships or partnerships may not qualify for these benefits. This income tax discrimination, which is particularly burdensome to professional men who practice as individual proprietors and partners, is the subject of the following discussion.

THE PROBLEM—ITS ORIGIN

Until 1935 the problem of financing the retired years of life had been left largely to private initiative, although a few states had enacted pension laws prior to that date. The Social Security Act of 1935 embodied a new doctrine of individual irresponsibility, or social responsibility; society through government would provide minimum benefits for the aged. The Social Security Act, however, because of its limitations and exclusions, introduced certain glaring inequities.

The old age and survivors insurance sections of this Act provide for employee pensions financed by equal taxes paid by employer and employee on the portions of annual salaries not in excess of $3,000. Employers pay their share out of gross receipts. Their payments, as costs of doing business, are income tax free. Employees, on the other hand, cannot deduct their contributions for income tax purposes, but the pensions, when received, are not subject to federal income taxes. The effect of the Act was to provide proportionally greater benefits for those with incomes below $3,000 than for those with incomes above $3,000. Before the new social theory could become properly integrated with our way of life, an inequity such as this had to be eliminated.

Section 165(*a*) and related sections of the 1942 Federal Internal Revenue Code provide for additional pensions or shares in profit-sharing trusts on the basis of total income, not just that portion under $3,000. Although these additional pensions and profit-sharing plans largely benefit those with incomes of less than $3,000, I firmly believe that Section 165(*a*) and related sections were primarily designed to round out the program first introduced in an incomplete form in the depression-born Social Security Act in that they provide more equitable treatment for those with incomes above $3,000 in an era of steeply progressive income tax rates. Since the code's provisions, however, are restricted to employees including executives of corporations, those who conduct their businesses or professions as single proprietorships or partnerships are excluded. Thus all single proprietors or partners—farmers, shopkeepers, professional men—suffer this income tax discrimination.

The very nature of professional work and training makes this discrimination a particular hardship for professional men. The total lifetime income taxes paid by a professional man on a lifetime income may greatly exceed those paid by a nonprofessional person on the same lifetime income, because the former has a long training period and his high earnings are "bunched" into a relatively small number of peak earning years. Those professional men who can qualify as employees under Section 165(*a*) of the Federal Internal Revenue Code—for example, company physicians or company lawyers—receive more reasonable treatment. Their employers can set aside funds for pensions which, as already noted, are deductible from company income as business expenses and therefore are not a taxable part of employer or company income. Section 165(*a*) and related sections also provide that these funds are not subject to individual income taxes as a part of the recipient's income until he actually receives them, either on retirement or when he cashes in on his profit-sharing account. Thus the real benefit to the salaried professional man is derived from the postponement of the payment of taxes on his income until a time when his income, and therefore his tax rate, is expected to be lower. The realization of this benefit, of course, hinges on the income tax laws at the time the cash is received as well as on the individual's income at that time.

THE CASE FOR PHYSICIANS

Since my work is most closely associated with the medical profession, I shall discuss their particular situation. Important in evaluating income tax policies affecting the physician is a knowledge of the unusual pattern of his economic life. First, consider the cost of becoming a physician. The prospective physician typically spends at least three years in premedical training and four years in a medical college—a total of seven years. Almost all graduating doctors of medicine today spend a year in internship. During this year the physician receives board and room and sometimes a nominal salary. The year of internship, or eighth year of training, is thus one of zero income but no cost. The previous seven years were years of cost and years of zero income. The physician who wishes to specialize, in addition to his year of internship, must serve one or more years—depending, in part, on the field he has chosen—as a resident in an approved hospital. As a resident he will receive board and room and a nominal salary. At about age 28, then, our typical physician may begin to earn an income.

During the seven years before graduation from medical school our physician spent about $3,500 for tuition, books and the like—exclusive of board, room and clothing. During his two years of internship and residency he was presumably self sustaining on his small salary. But the money he might reasonably have earned

This discussion is based on a paper read at a Symposium on Medico-legal Problems in the fall of 1948. The symposium was jointly sponsored by the Chicago Bar Association, the Chicago Medical Society and the Institute of Medicine of Chicago.

throughout the entire nine years of training, in addition to the value of the perquisites and small salary of his internship and residency, must be added to the $3,500 expenses incurred in school. This income would have been roughly $26,500 for the nine years. Thus his out-of-pocket expense plus his lost income is approximately $30,000. When interest is accumulated on this amount the nine year training period has cost the young man entering the practice of medicine at age 28 roughly $35,000.[1] He must amortize that investment—pay it off in annual installments—before it can be truly said that he is even with another man of the same age who started to earn after leaving high school at age 18.

An endowment policy for $35,000 in force from age 28 to age 65—the traditional age of retirement—and payable in full at age 65 or death, whichever is earlier, would require a premium of about $800 per year.[2] An additional $1,400 per year, the 4 per cent interest on a $35,000 capital investment, must also be recovered. Thus a physician must earn $2,200 per year after paying the expenses of operating his office and after paying taxes on his income just to amortize the cost of his training. The operating expenses (office rent, personnel, supplies) of a physician in private practice generally run about two fifths of his gross income. His income taxes, depending on his income bracket, may be any one of numerous possible amounts. Nevertheless, considering expenses and taxes, it is reasonable to estimate $5,000 per year as the minimum allowance in terms of gross income necessary to amortize a capital cost of $35,000. Hence the first $5,000 of gross income for the physician should be excluded in making comparisons with the earnings of a person whose earning period started at age 18.

The original investment cost, depending on the length of the training period, is not equally great for all professions. For example, the time spent in training by the certified public accountant is appreciably shorter than that of the physician. Four years of college and some additional work are generally necessary for certification. The accountant's working life expectancy, or the probable number of years between the beginning and end of his career, is greater than that of the physician. His lifetime earnings will accordingly be spread over a longer period of time and the degree of income tax discrimination against him less than the discrimination against the physician. The smaller amount of capital investment in accountancy training also imposes a smaller burden of annual amortization.

PHYSICIANS' INCOMES

How much does the typical physician earn? Available data indicate that at the outbreak of World War II the average annual income (after expenses) of physicians in active private practice was between $5,000 and $5,200. During the war the picture was greatly disturbed by the induction of 40 per cent of the physicians into the armed forces. Sixty per cent of the physicians, then, were left to care for the 90 per cent of the population that remained at home. Studies of the Bureau of Medical Economic Research of the American Medical Association indicate that during the war period patient visits per physician increased three fourths. Consequently the income of the civilian physicians rose sharply during the war, but not as fast as the national income. It is likely that the average net income in 1947 was about double the prewar level. More definitive statements can be made when the United States Department of Commerce returns to its prewar practice of conducting surveys of physicians' incomes.[3]

We do know, however, that the percentage of personal consumer expenditures made for the services of physicians is lower now than it was before World War II. National income and total personal consumer expenditures for all goods and services, when adjusted for the increase in population, have increased more rapidly than the income of the typical physician in the United States. (The number of physicians has increased 14 per cent since 1940, whereas the United States population increased only 12 per cent in the eight years since 1940.) Moreover the amount spent for physicians' services as a percentage of the amount spent for all medical care items has been declining.

An examination of the Consumers' Price Index, developed by the United States Bureau of Labor Statistics, reveals that physicians' fees have not risen as rapidly as the entire index since the base period 1935-1939. In 1947 the Consumers' Price Index stood at 159, as compared with 130 for the physicians' services part of the index. Thus, from the standpoint of prices or fees the physician has not enjoyed the general prosperity of the country. The physician has benefited from this prosperity in the fact that the percentage of uncollected fees has sharply decreased.

FORMS OF PRACTICE

Of the roughly 200,000 physicians in the United States, about three fourths, or 150,000, are in active private practice; the remaining 50,000 are retired or in full time hospital service as interns, residents or hospital superintendents or employed by government agencies or business firms. Roughly 4,000 physicians are now (November 1948) employed by business firms and roughly 19,000 are government employees, many of whom share in retirement programs. Of the 150,000 physicians in active private practice more than 90 per cent are individual proprietors. Approximately 2 per cent are in group practice usually conducted as a partnership. Possibly 5 per cent are in small partnerships, which we do not classify as group practice. Relatively few physicians in private practice are full time salaried employees of nonprofit corporations. Some may derive more than one half of their income as part time physicians for corporations. No data are available on the number of physicians now benefiting from corporation pensions and profit-sharing plans. In economic terms, the overwhelming majority of physicians in active private practice in the United States can be best described as small retailers of professional services. It is reasonable to say that almost all the net income derived by physicians from private practice is fully subject to current federal income taxes.

The physician's case, then, is this: He undergoes a long training period at a high cost. His earning period is substantially shortened because of this long training

1. This sum excludes, of course, the costs to the medical school (over and above tuition) for the four years of training, about $10,000.

2. The self-employed physician does not face automatic retirement at age 65 as do many company physicians and therefore may provide for his old age by continuing to work. But if he does continue to practice he is, of course, denied the leisure of the retired company physician, who can live on a pension prepaid during his working years.

3. Plans have been completed for a survey of physicians' incomes to be conducted jointly by the United States Department of Commerce and the Bureau of Medical Economic Research in April 1950. The results of this survey will be published late in 1950.

period. Since a considerable portion of his lifetime income is "bunched" into a relatively few peak earning years, he is placed in a higher income tax bracket during those peak earning years and hence pays more income taxes during his lifetime than another person who receives the same lifetime income spread more evenly over a greater number of years. If he practices as an employee, he can receive some relief through Section 165(*a*) and related sections of the Internal Revenue Code by qualifying for an employee pension, which is not taxable until it is received. But since he typically practices as a single proprietor or partner, and not as an employee, he is subjected to income tax discrimination in this matter of pensions.

A. M. A. ACTION

The Board of Trustees of the American Medical Association authorized its representatives (Mr. J. W. Holloway Jr., Director of the Bureau of Legal Medicine, and me) to record, at a meeting of the Association of the Bar of the City of New York in February 1948, its support, in principle, of the proposal that the Internal Revenue Code be amended to permit physicians doing business as individual proprietors or partners to declare as business expenses the costs of pension programs for themselves with the proviso that there should be a reasonable maximum pension.[4] The American Medical Association believes that such an amendment would appreciably reduce the present discrimination.

The qualifying phrase "with the proviso that there should be a reasonable maximum pension" springs from a belief that without this limitation the proposal would lead to abuses and would sharply reduce federal tax revenues. Regulations have been promulgated under Section 165(*a*) and related sections which set forth formulas designed to prevent abuses, that is, disproportionate benefits for high-salaried corporation executives, especially those who are large stockholders. Since employers are required to set up a plan which provides reasonable benefits for lower paid employees, it is unlikely that pensions for higher paid employees will be out of line. The infrequency of the employee-employer relationship in the practice of medicine might make a similar set of checks unworkable for the medical profession. For this reason, the American Medical Association has recommended an over-all maximum pension.

In the hearings before the Committee on Ways and Means, House of Representatives, Seventy-Seventh Congress, second session, on the Revenue Act (March and April, 1942), Mr. Randolph E. Paul, then tax advisor to the Secretary of the Treasury, suggested $7,500 per year as one reasonable maximum for pensions financed by tax-free gross income. His suggestion was not adopted. If the decline in the purchasing power of the dollar is taken into account, his maximum today might be about $10,000. The American Medical Association has not recommended any specific amount as the maximum.

TWO METHODS

Two proposals for eliminating this tax discrimination against professional persons have been presented at this symposium by two eminent tax authorities, Mr. John R. Nicholson of the Chicago Bar Association and Mr. Harry Silverson of the Association of the Bar of the City of New York.[5] Nicholson has suggested that the Code be amended to permit individual proprietors and partners to qualify for the pensions financed by tax-free gross income. A different approach has been presented by Silverson. His premise is that taxation should be based on lifetime earnings or some kind of an average of lifetime earnings. Since it is impractical to devise a system of lifetime income taxes involving this concept, he believes that individuals should be enabled to postpone for some years, possibly to age 60, but at least for five years, the constructive receipt of some of their income. His plan involves exclusive investment of limited amounts of tax-free income in a special issue of low interest-bearing government bonds; taxes on the income invested in these bonds would be deferred until the bonds were cashed. The Silverson plan would appear to hold more appeal for some other professions than for physicians. Its greatest benefit would be received by those professional men whose incomes are severely affected by the business cycle, for example, architects. Both the Nicholson and Silverson plans deserve continued study. The extension of the Social Security Act to cover individual proprietors and partners has not been suggested in these meetings as a third proposal, for it obviously would not provide equitable treatment for those professional men with annual earnings in excess of $3,000, the present Social Security limit.

It has been argued by some tax attorneys that it is not possible to eliminate the discrimination against the professions without making whatever relief is given available to all individual proprietors and partners—to farmers, storekeepers and the like who do not incorporate. Be that as it may, I submit that the problem is greatest for professional persons—in particular, for physicians. It is imperative that a solution be found by those versed in the drafting of income tax laws.

I do think, however, that in removing the present inequities we must be guided by one important consideration or limitation. We should not provide this tax relief in such a way as to increase the burden of the public debt for all of us. The specter of an increasing public debt is already before us. It is felt in the inflationary pressures in our economy. It may make the real benefits of a plan of deferred income payments unrealized by the very persons whom the plan was designed to help, not only by decreasing the purchasing value of the pensions but also by making increased taxes necessary. The public debt in the form of government bonds, although recognized as assets by the holders of the bonds (individuals and corporations) must be considered the liability of all our taxpayers. For the public debt consists of claims to be paid out of general revenues. These claims on the wealth of the country should be recognized as a debt by every person. If these claims were recognized as personal liabilities, citizens would realize that they are much poorer than they think they are when they forget about the public debt. Moreover, if each physician, lawyer

4. This action of the Board of Trustees was reported in THE JOURNAL (136:834 [March 20] 1948).

5. A complete description of the proposals of Mr. J. R. Nicholson (135 South LaSalle Street, Chicago 3) and Mr. H. Silverson (1440 Broadway, New York 18) can be found in the following publications: Nicholson, J. R.: Pensions for Partners, Am. Bar. A. J. 33:302 (April) 1947; Comments on Mr. Rudick's Plan and Replies to His Strictures, Am. Bar A. J. 33:1005 (Oct.) 1947; Partnership Agreement Providing for Payment to Partner's Widow, Business Lawyer 2:29 (April) 1947; Tax Inequities Against Professional Men; A Remedy, Chicago Bar Association Symposium on Taxation of Earned Income, (Oct. 27) 1948 (mimeographed). Silverson, H.: A New Tax Proposal, Am. Mercury 64:345 (March) 1947; Earned Income and Ability to Pay, Tax Law Rev. 3:299 (Feb.-March) 1948.

or other professional person would compute his share[6] of the burden of the public debt, he would be more anxious than ever to obtain immediate relief from the income tax discrimination under discussion. With a rising public debt, there is no assurance that a tax rate for a given income bracket would not be increased at a later date to amortize the debt.

There will undoubtedly be much disagreement over the final details of a plan for eliminating the present tax discrimination against professional men. Nevertheless, professional persons, who must endure the cost of entering their profession late in life after prolonged and expensive training, must be encouraged to provide pensions for themselves. The need for amending our tax laws must be recognized and met if the goal of reasonable pensions for all is to be attained. The Social Security Act of 1935 marked the departure, at the federal level, from the doctrine of individual responsibility for pensions. The 1942 Federal Revenue Act was a long step forward in rounding out this new idea. The task of rounding out that Act to provide reasonable pensions for the self employed in all income brackets must be completed before the new doctrine of social responsibility can be considered integrated and mature.

Clinical Notes, Suggestions and New Instruments

AN OCULAR HYPERTENSION INDICATOR (TONOMETER)

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The ocular hypertension indicator (tonometer) is a screening instrument and not a diagnostic instrument. We believe that this instrument, placed in the hands of general practitioners according to some acceptable plan, may prevent blindness through the earlier discovery of hypertension and earlier reference of the patient to an ophthalmologist. In our opinion the screening instrument need only indicate whether the intraocular pressure is below or above normal. This restriction eliminates the delicate parts of the diagnostic tonometer.

Description of Instrument.—The hypertension indicator uses the footplate and plunger details of the well known Schiötz tonometer. The weights of these parts correspond to the Schiötz tonometer. At this point the similarity ends. In place of the lever, pointer and scale of the Schiötz, a two part, direct reading indicator is used. The reference part is screwed on the top of the footplate tube, and the indicator is screwed on the plunger rod. A reference line is on the footplate part and an indicator line is on the plunger. The instrument is adjusted so that these lines coincide when the indentation corresponds dimensionally to an intraocular pressure of 25 mm. of mercury or such other pressure as may be considered most suitable for screening purposes. The adjustment is accomplished by screwing the indicator up or down on the plunger rod. Once adjusted, it remains constant. The reading is magnified optically. The instruments illustrate two types of indicator—one for reading laterally at eye level, the other for reading vertically.

The working parts are mounted in a plastic holder. A free axial movement of approximately ¼ inch (0.64 cm.) is provided. The central part of the holder is hexagonal to provide a comfortable finger grip. Both ends are cylindrical and fitted with metal caps to make a dust-tight protection for the operating parts of the instrument. One cap is fitted with a testing block. The instrument with caps in place is slightly less than 3 inches (7.62 cm.) long and ¾ inch (1.91 cm.) in diameter.

Certain characteristics of the instrument should be noted. In the Schiötz tonometer the foot mechanism and the plunger are mechanically associated through the lever. This results in a transfer of weight from one to the other at different scale readings. In the hypertension indicator there is no mechanical association. Therefore the weights of the footplate and the plunger are constant. One type of indicator has the concave-tip plunger of the standard Schiötz. The others have the convex tip of the Schiötz-X specification. It is thought that the convex tip is preferable for the proposed usage. Clinical evaluation of this instrument in comparison with a standard Schiötz tonometer seems to indicate that for the one reading desired the results are sufficiently accurate.

Technical Considerations.—Reference is made to an article on tonometry, Friedenwald.[1] Interpolation in table 2, page 1001, of the reference paper[1] shows that the indentation produced

Hypertension indicator (Berens-Tolman). Note at arrow 1 that the indicator line is seen distinctly above the double reference line. This point indicates approximately 30 mm. of mercury with the instruments set for alinement at 25 mm. of mercury. Arrow 2 indicates the footplate cap with test block.

by the 7.5 Gm. plunger is 0.525 mm. at 30 mm. of mercury and 0.685 mm. at 25 mm. of mercury. The difference in indentation is 0.16 mm. The width of the lines on the index of the hypertension indicator is 0.10 mm. If the index is set for alinement at 25 mm. of mercury, the displacement at 30 mm. of mercury will be clearly seen, because even a partial displacement can be readily discriminated. A displacement equal to the width of the lines corresponds approximately to 3 mm. of mercury. We believe that this range is sufficiently accurate for screening purposes.

COMMENT

It is our hope that several ophthalmologists will be willing to test this instrument for screening purposes and that others will share our belief that such an instrument should be placed in the hands of general physicians. We also hope that use of the hypertension indicator may result in the prevention of much unnecessary blindness.

708 Park Avenue.

6. My method for computing an individual family's share of the public debt burden is presented in Bureau Bulletin 65, How Rich Are You?, Chicago, American Medical Association, September 1948.

Consulting Engineer (Mr. Tolman).
Development of the ocular hypertension indicator (tonometer) was aided by a grant from the Ophthalmological Foundation, Inc.
Read before the Section on Ophthalmology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

1. Friedenwald, J. S.: Contribution to Theory and Practice of Tonometry, Am. J. Ophth. 20:985-1024 (Oct.) 1937.

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1950

PLACENTAL TRANSMISSION OF CHLORAMPHENICOL (CHLOROMYCETIN®)

SIDNEY ROSS, M.D.
FREDERIC G. BURKE, M.D.
JAMES SITES, M.D.
E. CLARENCE RICE, M.D.
and
JOHN A. WASHINGTON, M.D.
Washington, D. C.

It has been shown that both streptomycin and penicillin are able to traverse the placental barrier and appear in the fetal circulation in therapeutic concentration. An experiment was carried out to determine whether chloramphenicol (chloromycetin®) similarly passes through the placenta. An oral dose of 1 Gm. of the drug was given to 8 patients and 2 Gm. was administered to 3 patients in active labor approximately one to five hours before delivery. Blood for chloramphenicol assays was obtained from the mother and cord at the time of delivery. In 1 instance, (case 11) the mother delivered twins and chloramphenicol assays were obtained on both infants. The serums were then tested for chloramphenicol content with a new chemical assay method developed in this laboratory by Bessman and Stevens.[1] This method has proved to be more accurate than the bioassay method and considerably simpler to perform.

It will be noted in the accompanying table that in 6 of the 11 patients chloramphenicol passed through the placental barrier

Correlation Between the Amount of Chloramphenicol in Maternal and Cord Blood at the Time of Delivery

Case	Dose (Gm.)	Time * (Hr.)	Chloramphenicol Levels (µg./Cc.) Maternal Blood	Placental Cord Blood
1	1	2	3.8	0
2	1	2½	3.8	0
3	1	5	7.5	3.8
4	1	2½	15.0	11.0
5	1	1½	3.8	0
6	1	1½	12.1	3.9
7	1	2	12.5	9.8
8	1	2	18.4	14.1
9	2	¾	2.5	0
10	2	1½	11.4	0
11	2	1½	30.0	17 21

* Interval of time elapsing between administration of chloramphenicol and delivery of infant.

in good concentration approximating 30 per cent to 80 per cent of that noted concomitantly in the maternal blood stream. In the 5 remaining patients chloramphenicol was not detected in the cord blood. However, in these patients the maternal blood concentration was 3.8 micrograms per cubic centimeter, or less in all instances but 1 (case 10). Thus, it would appear necessary to maintain an adequate maternal blood concentration in order for the placental threshhold to be exceeded and for diffusion of the drug into the fetal circulation to take place. In order to accomplish this and to achieve a therapeutic blood concentration, a maternal blood level of at least 10 micrograms per cubic centimeter would appear advisable. It is probable that a dose of 50 mg. per kilogram of body weight per twenty-four hours in a four hour divided dosage schedule administered to the mother would assure, in the majority of cases, sufficient placental transmission of the drug to control susceptible infections in the infant.

The significance of these observations may assume some importance in the event chloramphenicol is employed in the treatment of susceptible maternal infections. These would include bacterial pneumonias, septicemia, typhoid, rickettsias, shigellosis and genitourinary tract infections. Recent evidence [2] indicates that chloramphenicol is an effective drug in the treatment of syphilis and hence would similarly be effective in the treatment of congenital syphilis ante partum if it were employed as a substitute for penicillin in this disease. It is now known that certain virus infections such as maternal rubella during the first trimester of pregnancy are capable of producing fetal anomalies. Whether chloramphenicol-susceptible virus infections such as atypical pneumonia share this propensity for producing abnormalities in the fetus is unknown at present. However, the empiric use of chloramphenicol in such instances would be desirable in an attempt to avoid fetal damage, in view of the efficacy of the drug against this disease.

From the Research Foundation of Children's Hospital.
Miss Sara Stevens and Miss Helen Brown gave technical assistance.
The chloramphenicol was supplied by Dr. E. A. Sharp, Parke, Davis & Company, Detroit 23, Michigan.
This study was supported by a grant to Children's Hospital from the Antibiotic Study Section of the Division of Research Grants and Fellowships, the National Institutes of Health, United States Public Health Service.

1. Bessman, S. P., and Stevens, S.: A Colorimetric Method for the Determination of Chloromycetin in Serum or Plasma, to be published.

TREATMENT OF EXTERNAL OTITIS; A SIMPLE AND EFFECTIVE TECHNIC

IRVING L. OCHS, M.D.
Annapolis, Md.

In the past ten years the reports on external otitis have shown a growing realization of the role of Bacillus pyocyaneus (Pseudomonas aeruginosa) as a pathogen. Probably the earliest expression of this was by Morley [1] in 1938. Since that time, many others have been of the same opinion. Salven and Lewis [2] investigated 100 consecutive cases of external otitis. B. pyocyaneus was present in 45 per cent of these, whereas in a control group of 25 normal ears none had B. pyocyaneus or fungi. Beach and Hamilton [3] in a study of 69 cases of external otitis found B. pyocyaneus in 65 of them. Their control group of 50 normal ears did not show this organism. In a paper on fungous disease of the auditory canal Conley [4] stated that he found B. pyocyaneus in two thirds of the cases and concluded that these organisms, rather than fungi, should be considered as the common causative agent in external ear diseases.

The use of a tampon with a dilute aluminum acetate (Burow's) solution for acute external otitis is widely known. Gill, in his excellent review of the subject in 1938,[5] mentioned the use of 2 per cent acetic acid, but he placed no particular stress on it. In his article of 1942 [6] he did not mention it at all. In a review of external ear diseases in Jackson's textbook,[7] Gill again recommended use of 2 per cent acetic acid in treatment of infection due to B. pyocyaneus.

It is an established but not well known fact that acetic acid acts almost specifically as a bactericidal agent against B. pyocyaneus. It is frequently used as a wet dressing to overcome infections in contaminated surgical wounds, burns and granulating osteomyelitic wounds due to this organism. A solution containing 1 to 2 per cent acetic acid usually clears the malodorous green discharge in a few hours. There is no apparent damage to the tissue by this treatment.

A recent paper by C. R. Owen [8] vividly demonstrates the bactericidal properties of acetic acid, particularly against B. pyocyaneus, Bacillus proteus, and other gram-negative bacilli. This work was done to demonstrate the usefulness of acetic acid as a specific inhibitor of these organisms in the culturing of mixed infections. Owen found that 0.1 cc. of 10 per cent acetic acid added to 15 cc. of beef heart infusion broth yields

2. Romansky, M.: Personal communication to the authors.
1. Morley, G.: Otitis Externa: "Hot-Weather Ear"; Investigation of One-Hundred Cases and Method of Treatment, Brit. M. J. 1: 373 (Feb. 19) 1938.
2. Salven, S. B., and Lewis, M. L.: External Otitis with Additional Studies on the Genus Pseudomona, J. Bact. 51: 495 (April) 1946.
3. Beach, E. W., and Hamilton, L. L.: Tropical Otitis Externa, U. S. Nav. M. Bull. 44: 599 (March) 1945.
4. Conley, J. J.: Evaluation of Fungous Disease of the External Auditory Canal, Arch. Otolaryng. 47: 721 (June) 1948.
5. Gill, W. D.: Otomycosis: Some Remarks Concerning Its Prevalence, Symptomatology and Treatment, Ann. Otol., Rhin. & Laryng. 47: 189 (March) 1938.
6. Gill, W. D.: Otitis Externa, Ann. Otol., Rhin. & Laryng. 51: 370 (June) 1942.
7. Gill, W. D.: Otomycosis, in Jackson, C., and Jackson, C. L.: Diseases of the Nose, Throat, and Ear, Philadelphia, W. B. Saunders Company, 1945, pp. 242-247.
8. Owen, C. R.: Acetic Acid Inhibition of Gram Negative Bacilli in Culture Media, J. Bact. 52: 353 (Sept.) 1946.

a solution with a p_H of 5.0 to 5.5, and that this will completely inhibit the growth of gram-negative bacilli although permitting streptococci and staphylococci to grow. He also found that 0.5 cc. of 10 per cent acetic acid with a p_H of 4.5 would completely inhibit the growth of all organisms. He believed that this was a result of the acetic acid and not of the lowered p_H, since experiments "using hydrochloric acid or sulfuric acid in parallel with acetic acid . . . were entirely unsuccessful."

Three years ago, I decided to try to improve on the method of using the aluminum acetate tampon as a wet dressing by adding acetic acid to make a solution of about 2 per cent strength. In the past three years I have used this solution to treat 248 ears in 165 patients, without a single failure to clear up the acute phase of this condition. In every instance the discharge stopped within hours of the institution of treatment, the foul odor of infected, macerated skin was lost and the swelling subsided promptly. Many of these were acute external infections with no underlying skin abnormality. Most of the ears were draining. Some were swollen, red and tender, with no discharge. Some exhibited acute flare-ups of old infections, usually superimposed on a seborrheic dermatitis. Most patients with acute infections experienced rapid relief from pain, particularly those whose ears were discharging. About 20 per cent of the patients with acutely swollen ears without discharge failed to get relief or had increase in pain until after forty-eight hours of continuous application of wet dressings. However, since I was confident of the unfailing success of the treatment, these patients were given meperidine hydrochloride (demerol hydrochloride®) codeine or other indicated analgesic agents to cover the discomfort. Even in the face of fever and preauricular adenopathy no other treatment was used, except that 3 patients early in the course of this study were given sulfonamide drugs in addition, to control fever and adenopathy.

Five patients in this series had a chronic skin disease with superimposed infection that would relapse within a few days of removal of the wick. Three of these had seborrheic eczema, 1 acne rosacea and 1 atopic eczema. These patients were comfortable and without pruritus, or discharge, as long as a wet dressing was used. Their infections were refractory to the usual ointments and lotions, and they had to be referred to dermatologists.

THERAPEUTIC TECHNIC

The technic of treatment of external otitis is to clean any debris or discharge from the canal of the ear, using hydrogen peroxide to help loosen adherent particles. When the ear is thoroughly clean a snug cotton wick is inserted, and this is then saturated with acetic acid solution. The patient is then given a prescription for acetic acid and aluminum acetate solution and is told to keep the wick saturated with this, the amount and interval of application depending on the amount of cotton in the wick. This in turn depends on the depth and diameter of the ear canal.

When the canal is so swollen and tender that it cannot be properly cleaned, it will be found that after twenty-four hours of treatment with the wet dressing there will be considerable diminution in both swelling and tenderness, so that the ear can then be adequately cleaned. If any coagulum or other foreign particles are left before the wick is inserted, they will occasionally serve as a source of reinfection. Consequently, every effort is made to clean the ear meticulously, using hydrogen peroxide and irrigation, as well as cotton swabs.

After forty-eight hours the patient returns and the wick is removed. The keratinized layer of the epidemis will be found to be coagulated, and it is readily rubbed away with a thin dry cotton applicator. This leaves the underlying epidermis exposed. If there is still pain, swelling or adenopathy, another wick is inserted, and the patient follows the same regimen for another two days. In chronic eczematized ears it often requires a week or more of treatment with wet dressings before the skin returns to normal.

When the acute phase of the infection has subsided, if an underlying seborrhea remains the patient is given a prescription for juniper tar (Cade) oil, sulfur and salicylic acid, 3 per cent solution of each, in fungicidal [9] ointment and instructed in its use.

If the infection has been on previously normal skin, a fungicidal ointment [9] is generously applied and the patient is discharged. Apparently, these organic acids, possible because of the chemical similarity to acetic acid, are sufficiently bactericidal to maintain the skin of the canal in a healthy status.

In all these cases I used boiled household vinegar as a source of the acetic acid. This is about 5 per cent strength. In the office, I would wet the cotton tampon with equal quantities of vinegar and dilute aluminum acetate solution. Occasionally, I would use the vinegar full strength, particularly on an old eczematized ear, without any harmful effects except for a momentary stinging sensation.

REPORT OF CASES

The following cases are representative.

Mr. J. A., a white man aged 40, had continuously discharging ears for five years, with varying degrees of involvement, including oozing, eruption of the pinnae and surrounding areas of the face and neck. He had been treated with dyes, sulfonamide drugs, silver nitrate, roentgen rays and physiotherapy, without any significant change in his condition. Within hours of the use of the acetic acid tampon, the discharge stopped completely. The swelling of the canal subsided sufficiently to permit adequate cleaning. The wet dressing and cleaning regimen was continued until the swelling subsided completely. He was then told to apply the ointment, which kept his ear dry, smooth, open and relatively free of itching.

Mrs. L. P., a white woman aged 30, had bilateral external otitis of seven years' duration, with varying severity but with unremitting foul discharge for the entire period. The discharge and odor had disappeared at the time of the first dressing, after forty-eight hours' use of the acetic acid wick. The otitis healed completely with the use of the ointment, and she has remained free of disease for two years.

Mr. J. W., a white man aged 65, had bilateral external otitis of four years' duration. He had chronic lymphangitis of both pinnae, which were decidedly thickened and red. In addition to this condition, he had recurring bouts of acute erysipelas from the focus in his ears. With the application of the aluminum acetate wet dressing, the discharge stopped immediately. Several weeks of treatment with the wet dressing were required to reduce the swelling of his pinnae so that they returned to a normal status. He had remained free of all disease of his ear and face for six months at the time of writing.

CONCLUSION

An effective, available and inexpensive technic is proposed for the control of external otitis.

51 Southgate Avenue.

9. The proprietary fungicidal ointment contains sodium propionate 12.3 per cent, propionic acid 2.7 per cent, sodium caprylate 10 per cent, zinc caprylate 5 per cent, diactyl sulfosuccinate 0.1 per cent with inert ingredients 69.9 per cent and propyl alcohol 10 per cent.

Council on Foods and Nutrition

ACCEPTED FOODS

The following product has been accepted as conforming to the Rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

The Gerber Products Company, Fremont, Mich.

GERBER'S STRAINED PRUNS WITH TAPIOCA consists of prunes with approximately 12% sugar, tapioca flour not in excess of 5% and sufficient water for preparation.

Analysis (submitted by manufacturer).—Total solids 25.52%, moisture 74.48%, ash 0.28%, fat (ether extract) 0.12%, protein (N X 6.25) 0.38%, crude fiber 0.18% and carbohydrates other than crude fiber (by difference) 24.56%.

Vitamins and Minerals	Per Hundred Grams
Vitamin A	390 U.S.P. units
Thiamine	0.0434 mg.
Riboflavin	0.0218 mg.
Ascorbic acid	0.816 mg.
Calcium	7.7 mg.
Phosphorus	8.4 mg.
Iron	1.04 mg.

Calories.—1.01 per gram; 28.63 per ounce.

Use.—For use in the feeding of infants, convalescents and others requiring a soft diet.

Council on Physical Medicine and Rehabilitation

The Council on Physical Medicine and Rehabilitation has authorized publication of the following article.

HOWARD A. CARTER, *Secretary.*

TRIBUTE TO THE MEMORY OF DR. JOHN STANLEY COULTER

The Council on Physical Medicine and Rehabilitation of the American Medical Association records with deep sorrow the death of John Stanley Coulter, Chairman Emeritus of the Council on Physical Medicine and Rehabilitation, on Dec. 16, 1949.

Dr. Coulter died of cerebral hemorrhage at his home in Westville, Ind.; he was 64 years of age. The great pioneer in the early days of physical medicine and rehabilitation, Dr. Coulter provided inspiring leadership, wise counsel and diplomatic guidance during his long term as Chairman of the Council on Physical Medicine and Rehabilitation.

Dr. Coulter was born in Philadelphia, Sept. 27, 1885. He was graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1909 and from the Army Medical School, Washington, D. C., in 1911. He served in the regular Army Medical Corps until 1920, when he entered practice in Chicago and began pioneering in his special field, which was known successively as physical therapy, physical medicine and, finally, physical medicine and rehabilitation. During World War I, Dr. Coulter was a lieutenant colonel in the Medical Corps of the United States Army, and in World War II he was regional medical officer of civilian defense for Illinois, Michigan and Wisconsin.

In 1926 he joined the faculty of Northwestern University Medical School as assistant professor of physical therapy, becoming associate professor in 1932 and chairman of the department and professor of physical medicine in 1943.

Dr. Coulter was a member of the Council on Physical Medicine and Rehabilitation of the American Medical Association in 1930; he was elected Chairman in 1942 and Chairman Emeritus on Dec. 2, 1949. During World War II he was chairman of the Subcommittee on Physical Therapy of the National Research Council, and in 1941 he became scientific advisor to the Baruch Committee on Physical Medicine and Rehabilitation. He was in charge of the departments of physical medicine at Illinois Central, Michael Reese, St. Luke's, Alexian Brothers, Passavant and Wesley Memorial hospitals in Chicago and was consultant in physical medicine to the Veterans Administration Hospital, Hines, Ill.

Among Dr. Coulter's many outstanding activities were his services as member of the Board and secretary of the American Registry of Physical Therapy Technicians, charter member of the American Board of Physical Medicine and Rehabilitation, member of the American Rheumatism Association and Institute of Medicine of Chicago, past president of the American Society of Physical Medicine, past secretary-treasurer of the Society of Physical Therapy Physicians, fellow of the American College of Surgeons and treasurer and president of the American Congress of Physical Medicine. The last named organization in 1943 awarded him its gold key of merit. Dr. Coulter also served on the advisory committee of the Parmly Foundation for Auditory Research. He was the author of chapters in the "Handbook of Physical Medicine," associate editor of "Principles and Practice of Physical Therapy" and a member of the editorial board of *Archives of Physical Medicine.* He contributed to Reimann's "Treatment in General Medicine" (1939), Barr's "Modern Medical Therapy in General Practice" (1940) and Glasser's "Medical Physics" (1943).

John Stanley Coulter was the genial, energetic and inspiring leader of physical medicine and rehabilitation during its difficult formative years. For three decades he marched at the front of the pioneers who finally achieved the complete recognition of a special field of medical endeavor which had been maligned, reviled and considered akin to quackery. He, more than anyone else, bore the brunt of the attack. It must have been a source of tremendous gratification to John Stanley Coulter in his later years to see the establishment of the American Board of Physical Medicine and Rehabilitation and the establishment of a permanent Section on Physical Medicine and Rehabilitation in the American Medical Association and to realize that his long battle had been won; such an opportunity comes to few great men. The members of the Council on Physical Medicine and Rehabilitation will always be grateful to this unaffected, kindly, genial and extremely approachable friend for his guidance and leadership during some of its most difficult years.

REPORT OF THE COUNCIL

The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports.

HOWARD A. CARTER, *Secretary.*

ALOE PRECISION INFANT INCUBATOR ACCEPTED

Manufacturer: A. S. Aloe Company, Olive at Nineteenth, St. Louis 3.

The Aloe Precision Infant Incubator is used to house infants requiring especially controlled conditions of temperature and humidity. It consists of two separate parts: The incubator and a stand provided with casters. The incubator can be kept either on the rolling stand or on a stationary table.

Aloe Precision Infant Incubator

The dimensions of the incubator proper are 46 by 41 by 76 cm. (18 by 16 by 30 inches), and its weight is 34 Kg. (75 pounds). The dimensions of the stand are 74 by 46 by 84 cm. (29 by 18 by 33 inches), and it weighs 6.8 Kg. (15 pounds). The combined shipping weight is 45 Kg. (120 pounds). For operation of the heating and humidifying elements a source of alternating current at 60 cycles and 115 volts is required. The power consumption is 208 watts.

The device was found satisfactory in construction and operation. The Council on Physical Medicine and Rehabilitation voted to include the Aloe Precision Infant Incubator in its list of accepted devices.

MICRONIC HEARING AID, MODEL 303, ACCEPTED

Manufacturer: Micronic Corporation, 727 Atlantic Avenue, Boston 11.

The Micronic Model 303 is an electric hearing aid which, disregarding the clothing clips and control wheels, measures 89 by 57 mm. in length and width; in thickness it tapers from 21 mm. at the top to 18 mm. at the bottom. The weight of the batteries is 47.5 Gm., that of the receiver and cord, 11.5 Gm. and that of the case, without the foregoing, 90 Gm. The total weight is 149 Gm. Zinc-carbon batteries are required; the A-battery supplies 1.5 volts and the B-battery 22.5 volts.

A novel feature is the absence of any opening for the microphone in the front of the case. Sound reaches the concealed microphone through two slots in the top of the instrument. Separate sockets are provided for magnetic and for crystal receivers.

Laboratory and clinical evidence from sources acceptable to the Council indicated that the performance of this instrument, equipped with a magnetic receiver, was highly satisfactory. The Council on Physical Medicine and Rehabilitation voted to include the Micronic Hearing Aid, Model 303, with magnetic receiver, in its list of accepted devices.

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SATURDAY, APRIL 29, 1950

IRRADIATION HAZARDS

In recent years much confusion has arisen concerning the effects of ionizing radiations. There is, on the one hand, the irresponsible optimism with which occasional unqualified persons handle x-ray apparatus and radioactive substances; there is, on the other hand, the unreasoning dread that can be engendered by accounts of pain, mutilation and slow death following overexposure.

Attention has been focused on the subject because of developments during the war. At the same time, new research tools and treatments were being born with the preparation of radioactive iodine, iron, phosphorus and other substances. And yet, the fact that a considerable mass of knowledge has existed for many years often was overlooked. The use of radiation and its possible harmful effects are not new subjects to the many who are acquainted with this field of activity. Ingram recently presented a discussion of the health hazards in radiation work.[1] The term radiation hazard is limited to the dangers associated with ionizing radiations, although other radiations can be hazardous; for example, the radiant energy from heat and light. The effects of burns from excessive heat and overexposure to sunshine are well known. Sometimes there is failure to recognize that such hazards also stem from radiant energy.

The undesirable effects of ionizing radiation were discovered within a year following Roentgen's discovery. A recent book by Grubbé[2] reports the tragic experiences of a pioneer in this field. Another discussion of similar interest in this connection is by Brown,[3] which reports the deaths of 28 American physicians during the early days of roentgenology. Apparently the number of pre-Hiroshima victims of ionizing radiations has never been estimated. The estimate would have to include the victims of radium and its congeners, victims outside the United States, victims among physicists, dentists, nurses, technicians and patients and victims of tumors and blood dyscrasias, whose connection with ionizing radiation long remained unsuspected.

Ingram points out that all types of ionizing radiations produce cell destruction and that, from a biologic viewpoint, roentgen rays, gamma rays, alpha and beta particles and neutrons differ essentially only in the distribution and the magnitude of the destruction produced. Roentgen rays are widely employed, especially in hospitals and industries, and bring danger to persons who fail to adhere to protective measures. Lead-containing gloves and aprons must not be thought of as giving absolute protection. Absorption of gamma and roentgen rays by shielding materials is, theoretically, never complete. If a given thickness of a given material reduces the intensity of incident radiation to one half, then two thicknesses reduce it to one fourth and three thicknesses to one eighth, never to zero. Hence gloves and aprons cannot protect from exposures too intense, too prolonged or too often repeated. Appreciation of the penetrating ability of the beams from modern sources can be gained by viewing the 90 ton concrete blocks piled up about a synchrocyclotron.

Gamma rays as produced by radium, high voltage x-ray machines, accelerators and chain-reacting piles are similar to roentgen rays, except that they have shorter wavelengths and are more penetrating. Other ionizing radiations vary in this respect. Alpha particles penetrate poorly and are absorbed at the surface of the human skin; hence they are effective, for good or ill, only at close range and can be devastating to superficial structures. This is one practical reason why physicists distinguish between "alpha-emitters" and other radioactive substances. Beta particles are more penetrating, but also more complicated in their effect. Neutrons are outstanding for their great penetrating power and provide a hazard for those working with cyclotrons and chain-reacting piles. Ingram warns that the latter hazards probably will increase as research on nuclear physics increases. One hazard of gross overexposure is the development of cataracts.

Thus, radiologists, researchers and those who handle for other reasons radioactive substances are exposed to hazards for which precautions must be instituted and carefully observed. Ingram's recounting of the development of recognition of the hazards provides a thoughtful reminder of the experience that sometimes seems to be necessary before the true status of health problems

1. Ingram, M.: Health Hazards in Radiation Work, Science 111:103 (Feb. 3) 1950.
2. Grubbé, E. H.: X-Ray Treatment: Its Origin, Birth and Early History, Milwaukee, The Bruce Publishing Company, 1949.
3. Brown, P.: American Martyrs to Science Through the Roentgen Rays, Springfield, Ill., Charles C Thomas, Publisher, 1936.

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is revealed. Health protection programs when instituted and rigidly followed have been successful. Such protection is necessary to minimize the harmful effects of radiation on the skin, bones, blood and generative and other tissues. Of warning significance is the assertion that there is not now available, nor is there likely to be, a single specific remedy for radiation injury.

Radiation and radiation hazards are words with which the medical profession will become more familiar. Ingram writes: "Radiation has gained a permanent foothold in modern science and industry, and society is presently struggling to learn to live with it. . . . The attitude of alarm which has been so commonly associated with the idea of radiation work can safely be discarded, provided it is replaced by one of healthy respect for protective rules." Members of the medical profession have much responsibility in establishing the foothold for radiation and in developing the requested healthy respect for protective measures.

LEPROSY IN THE UNITED STATES

Leprosy (Hansen's disease) never has been an important problem in Continental United States for the practicing physician or for public health authorities. The total number of cases that have been reported never has exceeded about 500 at any one time. There are six leprosariums maintained by the United States and the territories with about 950 patients. About 390 patients are in the United States Marine Hospital, Carville, La. The physician generally has left the care of patients to a few specialists in municipal, state or federal institutions. Public health authorities generally have removed patients from their jurisdiction to the United States Marine Hospital. The health officer often has been forced to this decision against his better judgment because of the exaggerated fear, at times amounting almost to hysteria, of the local population. For both practitioner and health officer, these attitudes fortunately are in process of change.

During the last decade a much more hopeful outlook in respect to medical treatment has been effected. Chaulmoogra oil and its derivatives, which were the drugs that were chiefly used for years, have been discarded, their uselessness having been demonstrated to the satisfaction of most students of the disease. Much credit for the prospect for improved therapy is due to the work of the United States Public Health Service officers at the federal hospital at Carville. Led and inspired by the late Dr. Guy H. Faget, this group used glucosulfone sodium (promin®), which had been tried by others without much success in human tuberculosis. After months of discouraging trial, definite improvement was observed in many cases, a result never before shown by any other therapeutic agent, although leprologists generally agree that it is too early to speak of the new agent as definitely curative. Some other members of the sulfone group gave similarly encouraging results. Some of the latter, notably sulfoxone sodium (diasone®), which recently was accepted by the Council on Pharmacy and Chemistry of the American Medical Association, may be given by mouth. Results with the sulfone drugs put the treatment of the disease in the hands of the practicing physician, although most physicians no doubt will prefer to have the treatment inaugurated at Carville.

The changes in the public health point of view are to some extent due to the development of a more hopeful outlook for successful treatment but are associated more with a somewhat belated recognition of certain not widely appreciated features in the epidemiology of the disease. There are limited areas in which the disease tends to spread in the United States, mainly in parts of Florida, Louisiana and Texas. Elsewhere the disease shows little or no tendency to be communicable. California is the nearest to being the exception to this generalization. The records show that, of about 600 cases reported, only 23 probably have been infected in that state, the remainder having been infected elsewhere. In New York state and Vermont the lack of danger of infection long has been recognized, and these states do not require reporting of the disease. Massachusetts does not have restrictions concerning minimum periods of isolation of patient and quarantine of contacts. Ten other states do not have leprosy regulations except for notification. The health authorities of at least some of these states probably were impressed by the experience of many years which has failed to bring to light any case of infection originating in New York, and only one was discovered in Massachusetts, although there have been many opportunities for contact with cases of this disease in both states.

Another influencing factor is the recognition that, even in areas of endemic prevalence, only persons discharging or likely to discharge the causative organism are sources of new infections. Furthermore, it is becoming increasingly accepted that with some exceptions infection is likely to occur only in the early years of life, although there may not be clinical manifestations for many years because of the long incubation or latent period. This stresses the need for preventing the exposure of infants and young children.

With the general acceptance of these changing concepts, the clinical treatment and the public health

management of leprosy can be viewed with more optimism than formerly was possible. In these days, when so much emphasis is being placed on the organization of research and the necessity of large funds to carry it on, it is significant to recall that the advances in control of leprosy have been made by careful clinical observation and epidemiologic facts judiciously appraised without special organization or special financial support.

Current Comment

POSTPARTUM PLASMA AND RHEUMATOID ARTHRITIS

In 1938 it was reported by Hench [1] that the occurrence of pregnancy in patients with rheumatoid arthritis produces a partial or complete remission of symptoms in a high percentage of cases. Following this lead, Granirer [2] of the Arthritic Clinic, Queens General Hospital, Jamaica, New York, found that a sustained remission can be produced by administration of a suitable amount of postpartum plasma. The remission is characterized by an improved sense of well-being, a brighter mental outlook, increased appetite, disappearance of joint symptoms, gain in weight, and a restoration to normal of the microcytic anemia and albumin globulin ratio. There were no toxic effects in 320 postpartum plasma transfusions performed in his clinic. The longest remission was 16 weeks and the shortest 3 weeks. At present there is no clear explanation of the ameliorating effect of postpartum plasma.

TAXES AND PENSIONS FOR PHYSICIANS

Under existing federal tax laws, physicians who practice as individual proprietors or partners face certain tax inequities with respect to pensions. Elsewhere in this issue (page 1357) Dickinson points out that section 165(*a*) and related sections of the Federal Internal Revenue Code provide that a company can set aside funds under approved plans for employee pensions or shares in profit-sharing trusts which are deductible from the company's income as business expenses and, therefore, are not subject to income taxes. These funds do not become a taxable part of the recipient's income until they are received, either when the recipient retires or when he cashes in on his profit-sharing account—at which time he will presumably be in a lower income tax bracket with a reduced tax burden. Only physicians and other professional men who are employees —for example, company physicians and company lawyers—can receive the benefits of such pensions. A physician undergoes a long training period (the longest among the professions) during which he foregoes income and incurs expenses accumulating to approximately $35,000 at the time of entering medical practice, at approximately age 28. The working lifetime remaining after this prolonged training period is shortened, and a considerable portion of his lifetime earnings is "bunched" into a relatively few peak earning years. During these peak earning years he is placed in a higher income tax bracket and hence pays more income taxes during his lifetime than another person who receives the same lifetime income spread more evenly over a greater number of years. Thus the question of pensions for physicians acting as individual proprietors and partners is particularly perplexing for them because of the unusual economic pattern of their professional lives.

ACTIVE HYDROLYSIS PRODUCTS OF ACTH

The adrenocorticotropic hormone of the pituitary has been found to have a marked effect on a wide spectrum of disease processes. Since the hormone is derived from the pituitary of animals, the ultimate quantity of drug which could be produced is definitely limited by the supply of pituitaries. Also, since the hormone is protein in nature, with a molecular weight of about 20,000, its synthesis in the laboratory would be of insurmountable difficulty. Li [1] reported that, after partial hydrolysis of pituitary adrenocorticotropic hormone to the peptide stage, fragments were obtained which retained biologic activity. These fragments had an average chain length of eight amino acids. Recently, Brink, Meisinger and Folkers [2] reported that ACTH derived from pig pituitaries was subjected to peptic digestion. The digestion products, of molecular weight small enough to be dialyzable, kept rheumatoid arthritis in remission in 2 patients who previously had been treated with ACTH. In addition, this dialysis was clinically active in a third patient. The effect of these degradation products was equivalent to the intact ACTH. On further acid hydrolysis, these active fragments were found by paper strip chromatography to contain at least seven or eight common amino acids. This work is of considerable importance from both the medical and biochemical point of view. With the activity of ACTH being confined to a relatively small molecular weight compound, it should be possible eventually to synthesize this active fragment in the laboratory. This, in turn, would free the amount of drug which could be produced from the number of pituitary glands available. In addition, evidence is added for the first time that a portion of a protein hormone may possess the physiologic activity of the intact molecule, indicating that the hormone in such a case may be considered to possess a prosthetic group.

1. Hench, P. S., Proc. Staff Meet., Mayo Clinic, **13**:161, 1938.
2. Granirer, L. W., 7th Int. Cong. Rheumatic Dis., New York, June, 1949, Science **111**:204 (Feb.) 1950.

1. Li, C. H.: Conference on Metabolic Aspects of Convalescence, 1948, Transactions of the Seventeenth Meeting, New York, Josiah Macy, Jr., Foundation, 1949, p. 114.
2. Brink, N. G.; Meisinger, M. A. P., and Folkers, K.: J. Am. Chem. Soc., **72**:1040 (Feb.) 1950.

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ORGANIZATION SECTION

Official Notes

CIVIL DEFENSE

Representatives of the state and territorial medical societies, allied professional groups and various federal governmental agencies will participate in the next meeting of the Council on National Emergency Medical Service, which will be held at American Medical Association headquarters, May 6, 1950. During this meeting, which will be concerned entirely with the medical and health aspects of civil defense planning, both formal presentations and round tables will be utilized to enable those present to acquaint themselves with various civil defense problems confronting the health professions, the civil defense aspects of the newer warfare agents, the federal government's training programs in the medical aspects of atomic warfare and the experiences of others who have planned and organized civil defense programs.

Washington Letter

(From a Regular Correspondent)

April 24, 1950.

Hospital Care of Retired Military Personnel

An executive order issued recently by President Truman will have the effect of increasing responsibility of military hospitals for care of retired service personnel and lightening the burden of Veterans Administration hospitals. Effective May 1, the Army, Navy and Air Force will furnish hospitalization, as required, for their own officers and enlisted men who have been retired for physical disability. Heretofore, the three services fulfilled this responsibility for regular officers but, in the case of Army and Air Force reserves, they were cared for in Veterans Administration facilities. In the past the Navy has provided hospitalization for regulars and reserves alike. The presidential order not only requires that hospitalization be administered on a common basis but specifies that enlisted men retired for physical disability shall be treated on the same basis as officers.

The directive also makes Veterans Administration responsible for hospitalization of chronic cases. After October 1 its facilities will care for all retired military personnel suffering from "chronic arthritis, malignancy, psychiatric or neuropsychiatric disorder, paraplegia, tuberculosis and such other diseases as may be jointly defined by the Administrator of Veterans Affairs, the Secretary of Defense and the Federal Security Administrator," according to the White House order.

Previously no distinction was made between chronic and acute conditions as far as hospitalization responsibilities were concerned. The decision to refer chronic cases to veterans hospitals was in conformity with recommendations made last year by the Hoover Commission.

D.A.R. Reaffirms Stand Against Socialized Medicine

The continental congress of Daughters of the American Revolution adopted a resolution in Washington April 19 reaffirming action which it took in 1949 in opposition to compulsory health insurance. Its text is as follows: "Whereas, powerful forces are at work to enforce the passage of a compulsory health insurance or socialized medicine act; and, whereas, such action would mean further heavy taxation through the creation of another huge bureaucracy; and, whereas, such legislation would violate the freedom and individual liberty of the people of the United States of America; and, whereas, such government invasion in the field of medical care could open an avenue of advance into other professions with a welfare state or socialism the inevitable result, Resolved, that the National Society, Daughters of the American Revolution vigorously opposes legislation designed to create state medical care with its vast extension of a parasitic bureaucracy which could result in a socialistic state in violation of the principles set forth in the Constitution of the United States of America."

Dr. Battenfield to Become Guam Medical Director

In the course of an official trip to Washington the latter part of April, Carleton Skinner, civilian governor of Guam, disclosed that Dr. John Y. Battenfield has accepted appointment as director of medical services for the island government. A reserve officer of the Army Medical Corps whose World War II duty was followed by civilian service on rubber plantations in Liberia, Dr. Battenfield is a medical graduate of the University of Oklahoma and holds his master's degree in public health from Johns Hopkins University. He is expected to report for his Guam assignment late in May.

Board Meets at Army Medical Center

Walter Reed Hospital, of the Army Medical Center in Washington, had the distinction April 14-16 of being the first Army hospital to be host to an American specialty board assembled to examine applicants for certification. About 100 applicants appeared for oral examination by the American Board of Dermatology and Syphilology. Examinations were conducted by nine board members and four guest examiners in the hospital's dermatology clinic.

Congress Passes Pathology Institute Bill

A bill (H.R. 6539) authorizing $350,000 for architectural planning of a new building for the Armed Services Institute of Pathology was passed by the Senate April 19 and sent to President Truman for approval. The measure previously had passed the House. It provides that the structure shall be erected on grounds of the Army Medical Center in Washington. At present the institute occupies buildings of temporary wartime construction about one mile west of the Capitol.

Medical Legislation

STATE LEGISLATION

California

Bill Enacted.—H. Res. 19-X was adopted March 31, 1950. It provides for an investigation by the Assembly Interim Committee on Public Health into the need of legislation regulating the use of electrical therapeutic instruments.

Kentucky

Bills Enacted.—S. 176 became law without approval March 27, 1950. It provides regulations for the licensing and examining of professional nurses. S. 175 became law without approval March 27, 1950. It provides regulations for the licensing and examining of practical nurses.

Massachusetts

Bills Introduced.—H. 2107 proposes to authorize the department of public health to establish alcoholic clinics and to establish a comprehensive program for the study of the problems of alcoholism. H. 2108 proposes to authorize the department of correction to establish and operate at the state farm a clinic for the examination, diagnosis and treatment of chronic alcoholics.

Michigan

Bill Introduced.—S. C. Res. 19-X proposes to memorialize the Congress of the United States to appropriate additional funds for the purpose of hospital construction.

Mississippi

Bill Enacted.—S. 11 was approved March 15, 1950. It provides for the creation of a four year medical school as a department in the University of Mississippi.

New Jersey

Bills Introduced.—A. J. Res. 14 proposes the creation of a commission for the purpose of studying the subject of cerebral palsy. S. J. Res. 8 proposes the creation of a commission to study the problem of the misdemeanant alcoholic and drug addict. S. 369, to amend the medical practice act, proposes that any honorably discharged veteran who has attended and successfully completed all or part of his required medical and surgical training in a professional school of a foreign country in good standing, in the opinion of the board, and who otherwise is eligible for admission to examination to practice medicine and surgery, may be admitted to such examination notwithstanding the fact that such medical and surgical training in a foreign country is not evidenced by a diploma or license conferring the full right to practice all of the branches of medicine and surgery in the foreign country in which such school is located.

Bills Enacted.—A. 275 has become chapter 25 of the Laws of 1950. It provides regulations whereby persons licensed to practice osteopathy in the state may secure a license to practice medicine and surgery, provided they meet certain qualifications and make applications therefor within a certain specified time. A. 402 has become chapter 28 of the Laws of 1950. It requires every physician to report each case of cerebral palsy coming to his attention to the local board of health.

New York

Bills Enacted.—A. 1299 has become chapter 453 of the Laws of 1950. It amends the education law by requiring school bus drivers to be examined by a duly licensed physician within two weeks prior to the beginning of each school year to determine the fitness of such driver to operate or continue to operate the school bus. A. 3270 has become chapter 302 of the Laws of 1950. It provides for creation within the department of mental hygiene of a mental hygiene council to consider any matters relating to the improvement of the state mental hygiene program and to advise the commissioner of mental hygiene thereon. S. 1335 has become chapter 563 of the Laws of 1950. It amends the law relating to physical therapy by including physical therapy and extends definition to electric and medicated baths and all types of therapeutic exercise.

Virginia

Bill Enacted.—H. 397 has become Chapter 512 of the Laws of 1950. It amends the law relating to the licensing of clinical psychologists by requiring applicants to be graduates of a college or university accredited by a recognized regional accrediting agency or to have had other academic training or specialized experience which, in the opinion of the board, is equivalent thereto.

Coming Medical Meetings

Aero Medical Association, Chicago, May 29-31. Dr. Thomas H. Sutherland, 234 S. State St., Marion, Ohio, Secretary.

American Association of Genito-Urinary Surgeons, Hershey, Penn., Hotel Hershey, May 24-26. Dr. Norris J. Heckel, 122 S. Michigan Ave., Chicago 3, Secretary.

American Association of the History of Medicine, Boston, May 21-23. Dr. Benjamin Spector, 416 Huntington Ave., Boston 15, Secretary.

American Association on Mental Deficiency, Columbus, Ohio, Hotel Deshler-Wallick, May 16-20. Dr. Neil A. Dayton, P. O. Box 96, Willimantic, Conn., Secretary.

American Bronchoesophagological Association, San Francisco, Mark Hopkins Hotel, May 25-26. Dr. Edwin N. Broyles, 1100 N. Charles St., Baltimore 1, Secretary.

American College of Chest Physicians, San Francisco, June 22-25. Mr. Murray Kornfeld, 1600 N. Dearborn St., Chicago 10, Executive Secretary.

American College of Radiology, San Francisco, June 25. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Congress on Obstetrics and Gynecology, New York, Hotel Pennsylvania, May 14-19. Dr. F. Bayard Carter, Duke Medical School, Durham, N. C., Secretary.

American Dermatological Association, Jasper National Park, Alberta, Canada, June 18-22. Dr. Louis A. Brunsting, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Diabetes Association, San Francisco, Hotel Whitcomb, June 24-25. Dr. John A. Reed, 1 Nevins St., Brooklyn 17, Secretary.

American Geriatrics Society, New York, Hotel Commodore, June 1-3. Dr. Mallord W. Thewlis, 25 Mechanic St., Wakefield, R. I., Secretary.

American Gynecological Society, White Sulphur Springs, W. Va., The Greenbrier, May 11-13. Dr. Norman F. Miller, 1313 E. Ann St., Ann Arbor, Mich., Secretary.

American Hearing Society, Chicago, Drake Hotel, June 15-17. Mrs. Frances E. Lee, 817 Fourteenth St., N.W., Washington 5, D. C., Secretary.

American Heart Association, San Francisco, June 22-25. Dr. Harold M. Marvin, 1775 Broadway, New York 19, Executive Secretary.

American Laryngological Association, San Francisco, May 23-24. Dr. Louis H. Clerf, 128 S. Tenth St., Philadelphia 7, Secretary.

American Laryngological, Rhinological and Otological Society, San Francisco, May 25-27. Dr. C. Stewart Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

American Medical Women's Association, Carmel, Calif., June 20-22. Dr. Grace Talbott, 909 Hyde St., San Francisco 9, Secretary.

American Neurological Association, Atlantic City, Claridge Hotel, June 12-14. Dr. H. Houston Merritt, 710 W. 168th St., New York 32, Secretary.

American Ophthalmological Society, Hot Springs, Va., The Homestead, May 11-June 2. Dr. Maynard C. Wheeler, 30 W. 59th St., New York 19, Secretary.

American Orthopedic Association, Virginia Beach, Va., May 23-26. Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secretary.

American Otological Society, San Francisco, May 21-22. Dr. Gordon D. Hoople, 1100 E. Genesee St., Syracuse 10, N. Y., Secretary.

American Pediatric Society, French Lick, Ind., May 8-10. Dr. Henry G. Poncher, 1819 W. Polk St., Chicago 12, Secretary.

American Psychiatric Association, Detroit, May 1-5. Dr. Leo H. Bartemeier, General Motors Bldg., Detroit 2, Secretary.

American Radium Society, New York, Roosevelt Hotel, May 25-26. Dr. Hugh F. Hare, 605 Commonwealth Ave., Boston 15, Secretary.

American Society for Clinical Investigation, Atlantic City, May 1. Dr. Paul B. Beeson, Grady Hospital, Atlanta 3, Ga., Secretary.

American Society for the Study of Sterility, San Francisco, Sir Francis Drake Hotel, June 24-25. Dr. John O. Hamon, 490 Post St., San Francisco 2, Secretary.

American Society of X-Ray Technicians, Columbus, Ohio, Deshler-Wallick Hotel, May 29-June 2. Genevieve J. Eilert, R.T., 16 Fourteenth St., Fond du Lac, Wis., Executive Secretary.

American Urological Association, Washington, D. C., Hotel Statler, May 29-June 1. Dr. Charles H. deT. Shivers, Boardwalk National Arcade Bldg., Atlantic City, N. J., Secretary.

Arizona State Medical Association, Phoenix, Hotel Westward Ho, April 30-May 4. Dr. Frank J. Milloy, 234 N. Central Ave., Phoenix, Secretary.

Association for Physical and Mental Rehabilitation, Memphis, Tenn., Hotel Peabody, May 23-27. Mr. Benjamin Forman, 37 Granger St., Canandaigua, N. Y., Secretary.

Association for the Study of Internal Secretions, San Francisco, June 23-24. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City 3, Secretary.

Association of American Physicians, Atlantic City, May 2-3. Dr. Henry M. Thomas Jr., 1201 N. Calvert St., Baltimore 2, Secretary.

California Medical Association, San Diego, April 30-May 3. Dr. L. Henry Garland, 450 Sutter St., San Francisco, Secretary.

Conference of Presidents and Other Officers of State Medical Associations, San Francisco, Palace Hotel, June 25. Mr. John E. Farrell, 106 Francis St., Providence, R. I., Secretary.

Connecticut State Medical Society, Waterbury, May 2-4. Dr. Creighton Barker, 160 St. Ronan St., New Haven, Secretary.

Hawaii Territorial Medical Association, Hilo, May 4-7. Dr. I. L. Tilden, Mabel Smyth Bldg., Honolulu 13, Secretary.

Illinois State Medical Society, Springfield, Illinois State Armory, May 23-25. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.

International and Fourth American Congress on Obstetrics and Gynecology, New York, Hotel Pennsylvania, May 14-19. Dr. Fred L. Adair, 161 E. Erie St., Chicago 11, Information Headquarters.

International Congress on Asthma, Mont Dore, Franer, June 3-4. Secretariat, 19 rue Boissonade, Paris, France.

Kansas Medical Society, Wichita, May 15-18. Dr. D. D. Vermilion, 512 New England Bldg., Topeka, Secretary.

Maine Medical Association, Poland Spring, June 18-20. Dr. Frederick R. Carter, 142 High St., Portland 3, Secretary.

Massachusetts Medical Society, Boston, Hotel Statler, May 16-19. Dr. H. Quimby Gallupe, 8 Fenway, Boston 15, Secretary.

Medical Library Association, Boston, June 19-22. Miss Helen Hlavac, 209 East 23d St., New York 10, Secretary.

Minnesota State Medical Association, Duluth, June 12-14. Dr. B. B. Sounter, 496 Lowry Medical Arts Bldg., St. Paul 2, Secretary.

Mississippi State Medical Association, Jackson, May 9-11. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.

Nebraska State Medical Association, Lincoln, Hotel Cornhusker, May 1-4. Dr. R. R. Adams, 1313 Sharp Bldg., Lincoln, Secretary.

New Jersey, Medical Society of, Atlantic City, Haddon Hall, May 22-24. Dr. Marcus H. Greifinger, 315 W. State St., Trenton 8, Secretary.

New Mexico Medical Society, Las Cruces, May 4-7. Dr. H. L. Janssy, 4852 Southern Ave., Albuquerque, Secretary.

New York, Medical Society of the State of, New York, May 8-12. Dr. Walter P. Anderton, 292 Madison Ave., New York 17, Secretary.

North Carolina, Medical Society of the State of, Pinehurst, The Carolina, May 1-3. Dr. Millard D. Hill, 13 W. Hargett St., Raleigh, Secretary.

North Dakota State Medical Association, Grand Forks, May 27-30. Dr. O. A. Sedlak, 702 First Ave. S., Fargo, Secretary.

Ohio State Medical Association, Cleveland, May 16-19. Mr. Charles S. Nelson, 79 E. State St., Columbus 15, Executive Secretary.

Oklahoma State Medical Association, Oklahoma City, June 4-7. Dr. Lewis J. Moorman, 210 Plaza Court, Oklahoma City, Secretary.

Rhode Island Medical Society, Providence, R. I. Medical Library, May 10-11. Dr. Morgan Cutts, 106 E. Francis St., Providence 3, Secretary.

Society of American Bacteriologists, Baltimore, May 15-19. Dr. John E. Blair, 1919 Madison Ave., New York 35, Secretary.

South Carolina Medical Association, Myrtle Beach, May 16-18. Dr. Julian P. Price, 103 W. Cheves St., Florence, Secretary.

South Dakota State Medical Association, Mitchell, May 20-23. Dr. Roland G. Mayer, 323½ S. Main St., Aberdeen, Secretary.

Texas, State Medical Association of, Fort Worth, May 2-5. Dr. Harold M. Williams, 700 Guadalupe St., Austin, Secretary.

Western Association of Industrial Physicians and Surgeons, San Francisco, June 25. Dr. Christopher Lepeo, C. & H. Sugar Refining Corp., Crockett, Calif., Secretary.

Western Branch, American Public Health Association, Portland, Ore., May 30-June 1. Mr. Walter S. Mangold, University of California, Berkeley, Calif., Secretary.

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GOVERNMENT SERVICES

ARMY

CIVILIAN INTERN PROGRAM

A number of positions are still available in the Army Medical Department's civilian intern program. Interested persons should submit their applications as soon as possible. The recent adoption of uniform service standards for medical interns in the armed forces makes no change in the army program. Service standards are:

(1) Army internship served in a military hospital; one year of further active duty in addition to each year of internship.

(2) Army internship served in a civilian hospital; two years of further active duty in addition to one year of internship.

To be eligible for this year's program, a candidate must be a potential graduate who will begin an internship during 1950 and must have been accepted for internship training in a civilian hospital acceptable to the Surgeon General. Persons who previously submitted applications for internship in an army hospital and who were not tendered appointments may apply for the civilian program simply by completing two short forms. A new physical examination will not be required at this time. New applicants must file the complete set of forms, which may be obtained at any medical ROTC office or directly from the Surgeon General of the Army. Army interns in civilian hospitals must satisfactorily complete eight months of internship to become eligible to participate in the professional examinations leading to appointment in the regular army.

MEDICAL STUDENTS IN SUMMER TRAINING

Many more medical students are expected to take part in the ROTC summer training camp program in 1950 than attended in 1949. Last year nearly 1,500 students received six weeks' summer training, while this year the Army expects about 2,500. Six Army general hospitals, among other places, will be used for summer training. They are: Walter Reed, Washington, D. C.; Letterman, San Francisco; Fitzsimmons, Denver; Brooke, Fort Sam Houston, Texas; Madigan, Tacoma, Wash., and William Beaumont, El Paso, Texas.

Medical, dental, veterinary and pharmacy students will take their training in two camps, the first beginning June 19 and the second August 7. Each camp will last six weeks. Non-veteran ROTC students of the medical and dental corps and all pharmacy and veterinary students will attend camps at the Medical Field Service School. Junior and Senior veteran students of the medical and dental corps, ROTC, will be trained at the Army general hospitals. Veteran students of the medical and dental corps, ROTC, scheduled to attend camp who have completed only the freshman or sophomore years of academic instruction will attend the camps at the Medical Field Service School. The 1950 ROTC summer training camp will place primary emphasis on military medicine, dentistry and surgery with additional training provided for veterinary and pharmacy students in the military application of their respective specialties. ROTC veterinary and pharmacy students will also get small arms training.

PSYCHIATRIC CONSULTANTS

Ten civilian psychiatrists and neurologists met April 12 in the office of the Surgeon General to discuss the army's treatment and training methods in this field and to make recommendations. The ten civilians are all official consultants to the Surgeon General. Attending the meeting were Drs. William C. Menninger, Topeka, Kan.; John M. Flumerfelt, Cleveland; Malcolm J. Farrell, Waverly, Mass.; Calvin S. Drayer and John W. Appel, Philadelphia; John M. Murray and Wilfred Bloomberg, Boston; William H. Everts, New Rochelle, N. Y.; Frederick R. Hanson and M. Ralph Kaufman, New York.

AWARDS AND COMMENDATION

Dr. Murray M. Copeland

The Legion of Merit was recently awarded to Dr. Murray M. Copeland, Washington, D. C. The citation read as follows:

"Colonel Copeland, Medical Corps, performed exceptionally meritorious service in the South Pacific Area from July 1942 to May 1944. As Operating Surgeon, 142nd General Hospital, as Assistant Base Surgeon, and later as Commanding Officer, 142nd General Hospital, he rendered service to the Army worthy of its highest ideals and in keeping with the acme of professional standards."

Dr. Copeland graduated from Johns Hopkins University Medical School, Baltimore, in 1927 and entered the military service in 1942. He is now professor of oncology at Georgetown University Medical School.

NAVY

ANNUAL INDUSTRIAL HEALTH CONFERENCE

The Navy's second annual Industrial Health Conference will be held in conjunction with the thirty-fifth Annual Meeting of the American Association of Industrial Physicians and Surgeons and associated groups of industrial dentists, industrial hygienists and industrial nurses on April 22-28 in the Hotel Sherman, Chicago. The objectives of the Navy group conference are to provide an opportunity for co-workers in the field to discuss common problems in the administration of the Navy industrial health program, to afford an opportunity for exchange of ideas on professional and technical aspects of occupational medicine, to provide opportunity for medical personnel of naval industrial plants to meet leaders of national prominence, with a view toward increasing their efficiency, and to insure that the navy industrial health program is conducted in the light of modern concepts and knowledge.

A panel session will be held at a joint meeting of all groups. The moderator of the panel session will be Gen. Fred M. Gillies, Chicago. Admiral Clifford A. Swanson, the Surgeon General, will discuss "Military Industrial Problems."

PERSONAL

Comdr. Donald J. O'Brien (MC, USNR), of Omaha, Neb., is being recalled to active duty at his own request.

Lieut. Granville I. Walker Jr. has been nominated to a residency in internal medicine, Naval Hospital, St. Albans, Long Island, N. Y., under the Navy's Graduate Medical Training Program.

The following reserve medical officers on active duty have been appointed to the regular Navy Medical Corps: Lieut. Comdr. Arthur V. Miller Jr., Monroe, La.; Lieut. William E. Fraser, Scarsdale, N. Y., and Lieut. (jg) Marshall G. Morris Jr., Greensboro, N. C.

AIR FORCE

MEDICAL OFFICERS FOR DUTY WITH AIR FORCE

The Navy will order an additional 100 medical officers to duty with the Air Force. The Bureau of Medicine and Surgery has sent letters to all inactive naval reserve medical officers of the rank of lieutenant commander and below who are less than 40 years old, asking for volunteers for this temporary assignment to active duty. These volunteers will be accepted for tours of duty of one or two years to fill the present and anticipated vacancies within Continental United States and, if desired, in overseas theaters. They will receive full pay, allowances commensurate with their rank and, in addition, $100 per month as authorized for medical officers on active duty.

VISIT OF AVIATION MEDICINE EXPERT

At the invitation of Gen. Hoyt S. Vandenberg, Chief of Staff, and Major Gen. Harry G. Armstrong, Surgeon General, Dr. Robert Staempfli of Berne, Switzerland, an authority on aviation medicine, arrived in the United States March 26 for an eight week visit. Dr. Staempfli has performed research in biophysics and aviation medicine. During his visit he will confer with Dr. Richard L. Meiling, Director of Medical Services of the Department of Defense, General Armstrong and Dr. Richard Coe of the Naval Medical Research Institute at Bethesda, Md. After visiting various medical centers Dr. Staempfli will return to Washington and thence to Switzerland.

PUBLIC HEALTH SERVICE

MENTAL HEALTH CLINICS

There were 485 mental health clinics in operation in the United States in 1947, according to a compilation made by the National Institute of Mental Health. Of the 485 clinics, 58 per cent were located in the Middle Atlantic and East North Central states. New York had 95 clinics, the largest number in any state; other states with 20 or more clinics were Illinois, Michigan, Ohio, Pennsylvania, New Jersey, Massachusetts and California. No clinical services were available in Idaho, Wyoming, Nevada, Utah, South Dakota, Alaska and the Virgin Islands. Traveling clinics numbered 82 and reported an average of three hours of service a week to 739 communities. Hospitals or public health departments conducted 62 per cent of the clinics. About 100 clinics operated independently; many were financed through a Community Chest. The remainder were operated in connection with public schools, courts, colleges and medical schools and departments of public welfare.

TWO GERMAN FELLOWSHIPS

Two German physicians have arrived in the United States for special training under a fellowship program sponsored by the U. S. High Commissioner for Germany. Both fellowships are for three months. Dr. Hans Schlossberger will study the application of the sciences of bacteriology and chemotherapy for the control of disease and the teaching and practice of preventive medicine here. Dr. Schlossberger has been a member of the Institute of Hygiene, University of Frankfurt, since 1946. Prior to that he was with the Institute of Hygiene of the University of Jena. He received his medical degree from the University of Tübingen in 1913. Dr. Henryk Nowakowsky will consult with leading scientists conducting clinical studies in endocrine disturbances; he is particularly interested in the relation of diseases of the hypothalamus and the hypophysis to sexual disturbances. Dr. Nowakowsky is a medical assistant in the Max-Planck Institute of Brain Research in Giessen. He received his medical degree from the University of Berlin in 1938.

LIBRARY TRAINING PROGRAM

A second 50 week course of specialized instruction under the medical record library training program of the Division of Hospitals will begin September 11. Students wishing to enrol must have their applications on file by July 15. The school, which is the first program of its kind in the federal service, is conducted at the U. S. Marine Hospital, Baltimore. The training course is approved by the Council on Medical Education and Hospitals of the American Medical Association. The full course consists of two years of instruction leading to the Associate in Arts degree at Baltimore Junior College, followed by a year of specialized training at the hospital. Advanced students who meet the qualifications for the third year of study may be admitted directly to the hospital. The class which begins in September is limited to 12 medical record library students. Applicants must have completed 60 semester hours of class work creditable toward a degree to be eligible. Graduates of the course may be given an opportunity to join the Public Health Service, but are not obligated to do so.

Application forms and information regarding the program are available from the Division of Hospitals, Public Health Service, Federal Security Agency, Washington 25, D. C.

DATA ON OCCUPATIONAL DISEASES

A two year study to determine the feasibility of a system for collecting reports of occupational diseases on a national scale will be initiated in May by the Division of Industrial Hygiene in cooperation with 10 states participating in the pilot study (Connecticut, Florida, Georgia, Indiana, Michigan, New Hampshire, New York, South Carolina, Tennessee and Wisconsin).

The 10 states have varying systems for reporting occupational diseases. If the study shows that a system of collecting the reports is feasible, the Division of Industrial Hygiene will seek to establish a national collection system through a cooperative program with state and local industrial hygiene units now in operation in 45 states and the District of Columbia. At present, reporting occupational diseases to state health departments is required in 26 states. The states participating in the pilot survey have agreed to use a specially designed transmittal form for reporting occupational diseases to the Public Health Service. The study is expected to reveal some of the problems and difficulties in establishing a national system of occupational disease reporting and the strength and weakness of the different methods used by states in collecting information on these diseases.

MEETINGS OF STUDY SECTIONS

Seventeen of the 18 study sections of the National Institutes of Health, research branch of the Public Health Service, will meet in May. The study sections have as members outstanding authorities in each of the major fields of medical research. The majority of these special consultants are nongovernment scientists. The study sections are responsible for reviewing applications for research grants in their respective fields and making recommendations to the appropriate advisory council of the Public Health Service. They also review the status of research in their particular field in order to determine areas in which research should be initiated or expanded.

PERSONAL

Dr. Lyndon F. Small, chief, Section on Chemotherapy, Laboratory of Chemistry and Chemotherapy, has been awarded the 1950 Hillebrand Prize for his contribution to the chemistry of alkaloids. Dr. Small, a graduate of Harvard, has been with the National Institutes of Health since 1939.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ALABAMA

Hospital News.—Construction was undertaken in March on the new Druid City Hospital at Tuscaloosa, a 200 bed institution to be completed at an estimated cost of $3,000,000. A modern hospital for general acute diseases and a nurses' home are included in the project.

Portrait Unveiled.—The portrait of Dr. James M. Mason, professor of surgery at the Medical College of Alabama, Birmingham, was unveiled February 5 at Jefferson-Hillman Hospital, where he is surgeon in chief emeritus. Dr. Mason, a graduate of Tulane University of Louisiana School of Medicine, New Orleans, in 1899, has completed 50 years of service in the medical profession.

CALIFORNIA

Personal.—Dr. C. Glenn Curtis of Brea, who since last May has been in Quito, Equador, as chief of a field party directing sanitation problems, returned March 9 to resume practice. He also directed medical assistance when a series of earthquakes occurred in central Equador last August.

Old Age Research Seminar.—Sponsored by the Social Science Research Council a seminar on old age research problems and methods will be held this summer on the Berkeley campus of the University of California, under the chairmanship of Harold E. Jones, Ph.D., professor of psychology at Berkeley. Representatives of the medical, legal and social science fields will participate in the nine week study.

Maimonides Hospital Opens in May.—The Maimonides Health Center, an 83 bed nonprofit hospital for persons with long term illness, will open for patients about May 1. The hospital is named for the twelfth century physician and philosopher Maimonides, one of the great personalities in the history of medicine. The hospital will provide therapy for patients with chronic diseases. Physical therapy and hydrotherapy departments have been established. In the eight story structure, all patients' rooms have a southern exposure. On the second floor are a patients' dining room, lounge, with a library on a mezzanine, and kitchen facilities. On the top floor are the therapy rooms; in the floors between are private patients' rooms, two bed and four bed rooms. The building contains many unique features.

ILLINOIS

Typhoid in State at Record Low.—The state director of public health reports that only 1 death from typhoid was recorded in Illinois last year as compared with 33 in 1940. As late as 1921, nearly 400 persons died of typhoid, while at the turn of the century nearly 2,000 persons died of this disease annually. The state health department now has records of 452 carriers of typhoid and paratyphoid who reside in Illinois. Through full time city, county and district health officers, a constant vigil is kept on the carriers to see that they keep faith with the regulations which are necessary to safeguard public health.

Chicago

The Bacon Lecture.—The Charles Sumner Bacon Lecture will be delivered in room 221 at the University of Illinois May 3 at 1 p. m. by Dr. Harold L. Sheehan, professor of pathology, University of Liverpool, England, on "The Pathology of Toxemias of Pregnancy."

Grant for Scholarship.—A $10,000 gift from an anonymous donor has been presented to the Chicago Medical School in honor of Drs. Milton S. Saslaw, Howard A. Engle and Morris H. Blau of Miami Beach. The gift will be designated a Subsidiary Scholarship and will be used to subsidize the education of a medical student at the school for a period of four years.

Personals.—Dr. George H. Pollock of the University of Illinois College of Medicine has been awarded a fellowship in the amount of $4,000 by the Commonwealth Fund of New York City to enable him to complete his training at the Illinois Neuropsychiatric Institute. The fellowship was given with the expectation that Dr. Pollock will assume duties as a member of the University's department of psychiatry, where he is an assistant.——Dr. Maurice H. Cottle was guest speaker at the Colorado Otolaryngological Society meeting in Denver April 12. His subject was "Physiologic Basis for Rhinoplastic Procedures."

Intern and Resident Reunion.—The Presbyterian Hospital Intern and Resident Reunion will take place June 6 at the hospital. A clinical program with morning and afternoon sessions will be held. A buffet luncheon will be served at the hospital at 12:30 and a dinner at the Congress Hotel at 6 p. m. Reservations should be made through the medical director's office of the hospital.

Dinner in Honor of Dr. Hoyne.—Friends and former students of Dr. Archibald L. Hoyne are invited to attend a dinner honoring him June 1 in the Congress Hotel at 6:30 p. m. Dr. Hoyne recently retired after serving 30 years as medical superintendent of the Chicago Municipal Contagious Disease Hospital. Information may be obtained from Dr. Rowine H. Brown, Seeley 8-2500.

District Office for Crippled Children.—Dr. Edward Press has been appointed as associate director of the University of Illinois' Division of Special Services for Crippled Children, in charge of the Chicago district office at 222 W. Adams Street. Dr. Press has served as regional medical director in the Chicago office of the U. S. Children's Bureau since 1947. He served in the Army Air Force for three and a half years during the recent war. Dr. Press received his M.D. degree from New York University College of Medicine in 1937 and his M.P.H. from Harvard School of Public Health in 1947. He is a specialist certified by the American Board of Pediatrics. Extension of the program of the division on an exploratory basis to include Chicago children who have rheumatic fever or other types of heart disease has been announced by the university. The program of the Division of Special Services for Crippled Children has been confined largely to children who live in downstate Illinois. A total of 9,075 children received treatment last year. The division is the official state agency to provide medical, surgical, corrective and other services and facilities for diagnosis, hospitalization and after-care of children who are crippled or who are suffering from conditions which lead to crippling. It is operated by the Board of Trustees of the University of Illinois.

KENTUCKY

Appoint Field Secretary.—Mr. Robert Poisall has been appointed field secretary for the Kentucky State Medical Association. He will act as coordinator between the association's headquarters in Louisville and its members throughout the state and will also make arrangements to offer the services of doctors as speakers in their communities, promote friendly relations between the medical profession and the public and aid in editing the journal of the association. Mr. Poisall was sports editor and columnist of the Danville (Ill.) *Commercial-News* for 24 years.

Cancer Society Honors Dr. Aud.—Dr. Guy Aud, Louisville, has been presented a medallion from the American Cancer Society for "distinguished service in cancer control." The presentation was made by Dr. Elmer L. Henderson, President-Elect of the American Medical Association. The award is made annually by the society. Dr. Aud is the first Kentucky doctor to receive the medallion. He was formerly chairman of the Board of the Kentucky Division, American Cancer Society, and is now regional medical director for fourteen Southeastern states for the society and a member of its national board of directors. The division has a cancer mobile unit, holds an annual symposium on cancer and has organized every county in the state for cancer control.

MASSACHUSETTS

State Medical Meeting in Boston.—The annual meeting of the Massachusetts Medical Society will be held at the Hotel Statler, Boston, May 15-18, under the presidency of Dr. Arthur W. Allen, Boston. Out of state speakers at the general sessions include:

Hart E. Van Riper, New York, Epidemic Poliomyelitis.
Howard A. Rusk, New York, Rehabilitation of Hemiplegics.
John H. Powers, Cooperstown, N. Y., Farm Injuries.
William Bierman, New York, Physical Medicine in Treatment of Peripheral Nerve Injuries.
Wendell G. Scott, St. Louis, Importance of Recognizing Early Cancer of the Colon.
Theodore E. Woodward, Baltimore, Treatment of Infectious Diseases with the Newer Antibiotics.
E. Jefferson Browder, Brooklyn, Management of Head Trauma.
Emanuel M. Papper, New York, The Anesthesiologist as a Practitioner of Medicine in the Community.
Edmond J. Farris, Ph.D., Philadelphia, Management of Sterility.
Donald M. Pillsbury, Philadelphia, Management of Chronic Dermatitis.

The annual oration will be presented Tuesday morning by Dr. John W. O'Meara, Worcester, on "Safe Management of Fractures." Dr. Merrill C. Sosman, Harvard Medical School, Boston, will deliver the Shattuck Lecture Wednesday at 11 a. m.

on "The Specificity and Reliability of Roentgen Diagnosis." A symposium on Peripheral Vascular Diseases is scheduled for Tuesday afternoon. Speakers will be Drs. Edward A. Edwards, Chilton Crane, Robert R. Linton, Boston; David W. Barrow, Lexington, Ky., and Capt. Henry W. Hudson (MC, USNR, retired), Chelsea. "What About Medical Laboratory Technologists?" will be discussed Wednesday afternoon by Drs. Robert A. MacCready, Boston, and Donald A. Nickerson, Salem; Mrs. Elinor Judd, M.T., and Prof. Philip M. Richardson, Ph.D., both of Boston. Guest speaker at the annual dinner Wednesday at 7 p. m. will be Claude M. Fuess, Ph.D., Chestnuthill, Mass. Section meetings will also be held. Technical and scientific exhibits will be displayed.

MICHIGAN

Institute on the Aging Population.—The Institute for Human Adjustment, in cooperation with the Extension Service of the University of Michigan, will present the Third Annual Institute on Living in the Later Years in Ann Arbor June 28-30. The program includes discussions of the aging population in relation to mental health problems, medical problems and education. Organized discussion groups and demonstrations are scheduled. Persons interested in attending are invited to write to the University of Michigan Extension Service, 4524 Administration Building, Ann Arbor.

Postgraduate Training in Industrial Health.—General Motors recently announced that in cooperation with the University of Michigan, Ann Arbor, it is inaugurating a postgraduate training program in industrial health technics for young physicians who have completed their internships. Under the program, the physicians will be in the employ of General Motors for 12 months. Eight months of this period will be served in the medical departments of General Motors and four months will be spent at the University of Michigan School of Public Health. This program, which compares with the resident hospital training many young physicians now undergo in other fields of medicine and surgery, was conceived by Dr. Max R. Burnell, Flint, medical director of General Motors; Drs. Henry F. Vaughan, dean of the School of Public Health and Clarence D. Selby, Detroit, resident lecturer in industrial health at the university. Any young man who has completed his internship in an approved hospital and is interested in industrial health work may apply for this training program through the General Motors Medical Director, General Motors Building, Detroit. Young physicians now serving their internship may begin this program after July 1.

MINNESOTA

Personal.—Dr. Kendall B. Corbin, professor of neuroanatomy in the Mayo Foundation, University of Minnesota, was appointed associate director of the Mayo Foundation, Rochester, on January 1. Dr. Corbin will continue active medical practice as a consultant in neurology in the sections on neurology and psychiatry at the clinic.

Report of Cancer Detection Center.—Cancer was detected in 34 visitors to the University of Minnesota's Cancer Detection Center during the first two years of its operation. A diagnosis was made in 30 cases on the first visit. In the 1,732 examinations (53 per cent) which revealed ailments or physical defects requiring medical attention, doctors assigned to the center found, in addition to the 34 definite instances of cancer, 776 precancerous conditions, 564 benign tumors and 2,149 instances of noncancerous conditions calling for immediate treatment. Rectal polyps accounted for 369 of the 776 instances of precancerous lesions. Many in whom abnormal conditions were discovered were found to be suffering from two or more different ailments. The center is open to Minnesota men and women 45 and over who are unaware of any symptoms of cancer in themselves. A fee of $10 is charged those who are able to pay. Opened in March 1948 as a project of the university's medical school, the center is located just west of University Hospitals in Minneapolis. Its operation is financed in part by the Minnesota state division of the American Cancer Society, the National Cancer Institute of the U. S. Public Health Service and the university's malignant disease research fund. Staffed by the director and 18 doctors who serve on a part time basis, the center is now open four days each week, Monday and Wednesday for the examination of men and Tuesday and Thursday for women. The average examination load is 15 per day and 60 per week. Admission to the center is by appointment only. To date more than 21,000 applications for appointments have been received.

MISSISSIPPI

State Medical Meeting in Jackson.—The Mississippi State Medical Association's annual meeting will be held May 9-11 at Convention Hall and the Robert E. Lee Hotel in Jackson, under the presidency of Dr. Braxton B. O'Mara, Biloxi. Out of state speakers include:

Vida H. Gordon, Little Rock, Ark., Allergic Diseases in Infants and Children.
Arthur A. Caire III, New Orleans, Blood Coagulation and Hemorrhagic Disease in Infants and Children.
Olav E. Hallberg, Rochester, Minn., Nose Bleed and Its Management.
Alston Callahan, Birmingham, Ala., Surgery of Glaucoma.
R. Lee Clark Jr., Houston, Texas, Treatment of Cancer of the Head and Neck.
Duane M. Carr, Memphis, Tenn., Suppurative Diseases of the Lungs and Bronchi.
Euclid M. Smith, Hot Springs, Ark., What the General Practitioner Needs to Know About Rheumatoid Arthritis, Including Remarks on Cortisone and ACTH.
Robert L. Brown, Emory University, Ga., Care of the Cancer Patient in General Practice.
E. Lee Dorsett, St. Louis, Unusual Complications in Obstetrics.
Mark S. Dougherty Jr., Atlanta, Ga., Management of the Patient with Hypertension.
J. Edwin Wood, Charlottesville, Va., Management of Acute Renal Insufficiency with Particular Reference to Internal Lavage.

The Distinguished Doctor's Oration will be delivered by Dr. James P. Wall, Jackson. The Woman's Auxiliary will meet May 8-10 at the Heidelberg Hotel. The state Pediatric Society and the state chapter of the American Academy of General Practice will hold meetings during the convention.

NEW JERSEY

Personal.—Dr. William C. Williams of Rutherford has been awarded a gold plaque as one of three authors of the "most distinguished books of 1949." The American Book Industry selected Dr. Williams' "Paterson: Book III" and "Selected Poems."

Symposium on Roentgenology.—The Morris County Medical Society heard a symposium by local roentgenologists April 20. Dr. Ernest A. May, East Orange, discussed "Carcinoma of the Lung."; Dr. Gail W. Haut, Morristown, "The Use of X-ray in Cardiac Measurement," and Dr. H. Vogel, Morristown, "Differential Diagnosis with Chest X-rays." A discussion followed the presentations.

Program for General Practitioners.—The New Jersey Academy of General Practice and the General Practice Section of the Medical Society of New Jersey will hold a combined meeting May 24 at 10:30 a. m. at the Haddon Hall Hotel, Atlantic City. Dr. William D. Stroud, Philadelphia, will speak on "Heart Disease and the General Practitioner"; Dr. Aaron H. Horland, Newark, "The General Practitioner, His Place in 1950 Medicine," and Dr. Herman H. Tillis of Newark on "Rheumatoid Arthritis in General Practice." The discussion following each presentation will be led by two state physicians.

NEW YORK

Plan Courses in Medical Aspects of Atomic Disaster.—Deans of nine medical schools of New York state met March 17 at the invitation of Dr. John J. Masterson, president of the Medical Society of the State of New York and Dr. Herman E. Hilleboe, state commissioner of health, to work out plans for postgraduate education of physicians in the medical aspects of atomic explosion. It was agreed that the medical schools would arrange for the courses of study and the selection of instructors in consultation with the state medical society and the state and city health departments. The medical society would assume leadership in mobilizing the doctors in every district in the state to attend the postgraduate meetings. The health departments would lend financial aid to pay for training of instructors and payment of lecturers and, in addition, would use the regional, county, city and district health officers to assist in local arrangements. A one day intensive course for all doctors to be held early in the fall will be the first goal. It may be necessary to hold as many as 60 separate meetings throughout the state. Longer courses for special groups will be held during the summer and fall.

Long Island College Merges with State University.—Articles of merger between the State University of New York and the Long Island College of Medicine were signed at a ceremony in the Waldorf Astoria April 5. The college will henceforth be under the State University's Board of Trustees, and the Board of the Long Island College of Medicine will pass out of existence. All of the physical and other assets of the college become the property of State University. These include a three acre site for future development on Kingston Avenue, Brooklyn, near Kings County Hospital, and a capital fund of about $2,000,000, approximately 85 per cent of which is in

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endowment. Simultaneously, State University takes over the leases on properties used by the college. The Long Island College of Medicine, incorporated under that name in 1930, stems directly from the former Medical College of the Long Island College Hospital, chartered in 1857. Since March 1860, 7,824 students have been granted the degree of Doctor of Medicine; of these, 3,545 are living. The Board of Trustees of the State University, charged by law with the duty of creating two medical centers, one in New York City and the other upstate, decided last June that the best interests of the state would be met by taking over and expanding going colleges rather than by inaugurating new ones. The committee of the Kings County Medical Society has offered the use of its library.

Carlyle Jacobsen, Ph.D., now executive dean of the Division of Health Sciences and Services at the State University of Iowa in Iowa City, will assume duties in June on a full time basis as executive dean for medical education at State University of New York with headquarters at Albany. The several schools in each medical center will be directly administered by resident officers.

New York City

Bancroft Lecture on Cancer Surgery.—The second Frederic W. Bancroft Lecture in Surgery, sponsored by the Alumni Association of Beth-David Hospital, will be delivered at the hospital May 3 by Dr. Allen O. Whipple, Valentine Mott professor emeritus of surgery, Memorial Hospital, New York, on "Radical Surgery in the Treatment of Cancer."

Hospital Installs X-Ray Therapy Machine.—A 2,000,000 volt x-ray therapy machine, will be installed at the Hospital for Joint Diseases. Work on a three level building in which the machine will be housed began April 16. It will be named the Lila Motley Memorial. The Lila Motley League for Cancer Research, raised and contributed to the hospital $153,000 of the contemplated $300,000 cost for construction of the building and purchase of the x-ray machine. Part of the balance of the costs will be provided from the Building Fund of the Federation of Jewish Philanthrophies of New York, with which the hospital is affiliated.

Postgraduate Course in Rheumatic Fever.—This course for physicians will be conducted June 1-14 at the St. Francis Sanatorium for Cardiac Children in Roslyn, L. I., under the direction of Dr. Leo M. Taran. The course consists of lectures and discussions, supplemented by examination and study of patients demonstrating all clinical phases of rheumatic disease. Part of the time will be devoted to roentgenography and electrocardiography and other laboratory procedures. Treatment will be studied in detail. Fee for the course is $75. Applications should be submitted before May 1. For information address Rev. Mother Superior, F.M.M., Supt., St. Francis Sanatorium for Cardiac Children, Roslyn, L. I.

OHIO

Seminar on Cardiovascular Disease.—This one day seminar will be presented May 14 at the Gibson Hotel in Cincinnati by the Southwestern Ohio Society of General Physicians in collaboration with the University of Cincinnati College of Medicine. Drs. Marion A. Blankenhorn and Eugene B. Ferris, will be moderators. Dr. Ralph E. Dolkart, Chicago, will discuss "Management of Acute Cardiac Failure" and "Common Cardiac Arrhythmias." Other subjects include Diagnosis of Coronary Occlusion, Prevention and Treatment of Rheumatic Heart Disease and Management of Hypertensive Disease. The fee is $10, payable to J. Robert Hudson, M.D., Secretary, 7017 Miami Ave., Madeira.

State Medical Meeting in Cleveland.—The Ohio State Medical Association will hold its annual meeting May 16-18 with headquarters in the Public Auditorium, Cleveland, under the presidency of Dr. Carl A. Lincke, Carrollton. Out of state speakers at the general sessions include:

George J. Andros, Chicago, Present Day Practice in Obstetric Analgesia.
Ralph M. Tovell, Hartford, Conn., Modern Concepts of Anesthetic Management for Gynecologic and Obstetric Patients.
The Honorable Robert A. Taft, Washington, D. C., Progress in Medical Care.
George F. Lull, Chicago, Secretary and General Manager of the American Medical Association.
Fred J. Hodges, Ann Arbor, Mich., Full Scale X-Ray Chest Examinations.
Jerome W. Conn, Ann Arbor, Mich., Metabolic Effects in Man of ACTH and Cortisone (Compound E).
John P. Calley, New York, Primary Tuberculosis Complex: Some Clinical and Roentgenographic Features.

Informal discussions have been scheduled for instruction on handling clinical problems in everyday practice, and six formal panel discussions will be held Tuesday and Wednesday afternoons from 1 to 2:30 p. m. The annual banquet will take place Wednesday evening. The Woman's Auxiliary to the association will meet in the Hotel Cleveland. Scientific and technical exhibits will be shown. Section programs will be presented and several state specialty societies will hold meetings.

TEXAS

University to Have Tuberculosis Hospital.—The Texas State Board of Health has granted $300,000 to match funds provided by the late Mrs. Rosa Zeigler to construct and equip a special hospital for tuberculosis patients at the University of Texas Medical Branch, Galveston. The building will have a capacity of 72 beds.

Alpha Kappa Kappa Lecture.—The chapters of Alpha Kappa Kappa at the University of Texas Medical Branch, Galveston, and at Baylor Medical College, Houston, have established an annual lectureship. The first speaker will be Dr. Andrew C. Ivy, Chicago. He will speak in Houston at the medical college May 16 and in Galveston May 17.

Brain Tumor Conferences.—Dr. I. Costero, neuropathologist of the Cardiology Institute, Mexico City, is offering a series of special conferences at the University of Texas Medical Branch, Galveston, during April and May on brain tumors, Monday and Friday afternoons, 3 to 5 p. m. Interested physicians are invited. Dr. Costero has been appointed visiting professor of neuropathology at the university and will spend a month each year at the Medical Branch to offer special instruction in neuropathology.

VIRGINIA

Pediatric Meeting.—The spring scientific meeting of the Virginia Pediatric Society will be held at the Hotel Roanoke in Roanoke May 5-6 beginning at 2:30 p. m. Guest speaker on Friday will be Dr. William Parson of Charlottesville, who will speak on "Endocrine Aspects of Growth and Development in Children." On Saturday Dr. Harry Bakwin, New York, will speak on "Differential Diagnosis of Behavior Problems" and will lead a round table on behavior problems at the close of the morning session.

WEST VIRGINIA

Health Officers Organize.—At a staff conference sponsored by the state department of health in Charleston March 10, the Health Officers Association of West Virginia was formally organized. Drs. Guy R. Post, director of the Wood-Parkersburg Health Department, was named president; Luke W. Frame, of the Cabell-Huntington Health Department, secretary, and R. Moore Dodrill Jr. of Welch, district health officer, treasurer.

Personals.—Dr. S. Elizabeth McFetridge, of Sheperdstown, was elected president of the West Virginia Cancer Society at the annual meeting held at the Kanawha Hotel in Charleston, February 23, succeeding Dr. Chauncey B. Wright of Huntington.——Dr. Thomas S. Knapp has been appointed superintendent of Spencer State Hospital, where he has been acting superintendent since January 3, succeeding Dr. Charles E. Hamner, who resigned to accept a position on the medical staff of the Columbus (Ohio) State Hospital. Dr. Knapp received his M.D. degree from Jefferson Medical School of Philadelphia in 1945. He was formerly on the staff of the former McGuire Hospital, now a Veterans Administration Hospital, in Richmond, Va., and served two years as a psychiatrist in the medical corps of the army during World War II.

WISCONSIN

Child Care Memorial.—The south side unit of the Child Care Center in Milwaukee will be named in memory of the late Dr. Katharine H. Baird, who served as medical advisor and board member of the center. The Child Care Centers serve children of preschool age, who cannot be satisfactorily cared for at home during the day. Dr. Karl H. Beck, Wauwatosa, is Dr. Baird's successor as medical advisor.

Federal Aid Hospital Completed.—Dedication ceremonies for the 33 bed general hospital at New Richmond, the first to be completed in Wisconsin under federal aid, were held Dec. 28, 1949, and the first patients were admitted January 2. The X-shaped building will be known as the Holy Family Hospital and will be operated by the Sisters of St. Joseph on a nonsectarian basis. It serves three small cities, eight villages and 14 townships.

HAWAII

Drs. Blalock and White to Address Annual Meeting.—The annual meeting of the Hawaii Territorial Medical Association will be held May 4-7 in the American Legion Hall in Hilo, under the presidency of Dr. Howard E. Crawford, Hilo. Guest speakers include Dr. Alfred Blalock, Baltimore, "Diagnosis and Treatment of Congenital Heart Disease Accompanied by Cyanosis," and Dr. Paul D. White, Boston, "Heart Disease in Middle Age." Dinner will be at the Volcano House Saturday evening. The Hawaii Physicians' Art Association will hold its third annual exhibit. After the meeting the two guest speakers will conduct a two weeks series of postgraduate lectures in Honolulu and will also address the Kauai and Maui counties medical societies.

PUERTO RICO

Four New Health Centers.—The U. S. Public Health Service has approved the building of four new health centers and hospitals in Puerto Rico under the federal hospital program. Plans for the following projects are being made, the insular government paying one-third the cost of each: A $156,000 health center in Camuy, a 38 bed general hospital and health center in San German to cost $360,000, alterations of the existing health center and construction of a 22 bed hospital in Vega Baja to cost $180,000 and a $112,500 new health center in Hormigueros.

Establish Medical Training Program.—The Office of Personnel of Puerto Rico, in collaboration with the Insular Health Department, has established a program for training men and women in medical specialties. The greater part of this training program is to be carried out in continental United States. However, facilities offered by the School of Tropical Medicine in San Juan and the local district hospitals will be used for training medical technicians, social workers, public health and sanitary engineering personnel. Several Puerto Rican physicians will take postgraduate courses in psychiatry, internal medicine, radiology and radiotherapy, pathology and tuberculosis. College graduates will be sent to the United States universities to study hospital administration, medicosocial work, mental hygiene, dietetics, social work supervision, training of mental handicapped, administration of social institutions and public assistance. Graduate nurses will be offered opportunity to get training both in Puerto Rico and in the United States.

GENERAL

Association of American Physicians.—This Association will meet at the Chalfonte-Haddon Hall, Atlantic City, N. J., May 2-3, under the presidency of Dr. Alphonse R. Dochez, New York. About 30 papers will be presented by members and invited speakers. The association dinner will be held Tuesday at 7:30 p. m., when Dr. John R. Paul, New Haven, Conn., will speak on "Clinical Observations on Archeology."

Meeting of Laryngologists.—The American Laryngological Association will meet at the Mark Hopkins Hotel, San Francisco, May 23-24, under the presidency of Dr. Ralph A. Fenton, Portland, Ore. The guest of honor, Olof Larsell, Ph.D., Portland, Ore., will speak on "Nervus Terminalis" at the opening session. A movie sound film on "Rehabilitation of the Laryngectomized Patient" will be presented Tuesday afternoon. The President's Reception will take place at 6 p. m. Tuesday. The Presentation of Instruments will be on Wednesday.

Wine Award in Urology.—Carl R. Moore, Ph.D., chairman of the department of zoology, University of Chicago, has been selected by the American Urological Association as recipient of its 1950 certificate of award and a check for $1,000 for outstanding and meritorious research on the male reproductive tract. The award will be presented at the association's annual meeting in Washington, D. C., on May 29. The Centre National de la Recherche Scientifique in Paris has invited Dr. Moore to participate in a colloquium to discuss "Sexual Differentiation in Vertebrates" on June 5-12.

Campaign Against Yaws in Haiti.—A campaign against yaws and syphilis in rural areas of Haiti will be undertaken shortly by the Haitian Government, the World Health Organization and the United Nations International Children's Emergency Fund. Dr. Sacha Levitan, a consultant on venereal diseases with the Pan American Sanitary Bureau, Washington, D. C., has been named technical director of the project. Dr. Adhemar Paoliello will help organize the campaign. It will be extended to the Dominican Republic as soon as arrangements with the government have been completed. The entire island thus will be included. The Haiti Government will furnish all facilities and services; the Pan American Sanitary Bureau, as the regional office of WHO, will supply the technicians, and UNICEF will provide supplies.

Prize for Research in Orthopaedic Surgery.—A prize of $1,000 donated by the Kappa Delta Sorority, is awarded annually by the American Academy of Orthopaedic Surgeons for the best research in orthopedic surgery or a related field by an individual in the United States. The award for the year 1950 will be presented at the eighteenth annual convention of the academy in Chicago Jan. 31, 1951. Researchers interested in competing are requested to secure information from Dr. R. Beverly Raney, Duke Hospital, Durham, chairman of the award committee for 1950.

Joint ENT Meeting.—A joint meeting of the West Virginia Academy of Ophthalmology and Otolaryngology and the Virginia Society of Ophthalmology and Otolaryngology will be held May 7-9 at the Greenbrier Hotel in White Sulphur Springs, W. Va. The following out of state physicians are on the program:

Bayart T. Horton, Rochester, Minn., Histaminic Cephalgia.
F. Bruce Fralick, Ann Arbor, Mich., Cataract Wound Closure with 6-0 Absorbable Gut.
Fred W. Dixon, Cleveland, Diseases and Treatment of the Hard and Soft Palate.
Edwin B. Dunphy, Boston, Ocular Therapeutic Principles and Practical Applications.

The annual banquet will be held Monday evening at 8 o'clock. A golf tournament has been arranged. Dr. Francis H. McGovern of Danville, Va., is president of the Virginia Society and will deliver the President's Address Monday on "Rhinological Aspects of Chronic Dacryocystitis." Dr. Garnett P. Morison of Charles Town is head of the West Virginia academy.

Committee on Alcoholism.—The Board of Directors of the National Committee for Education on Alcoholism has passed a resolution severing the tie between the committee and the Yale Plan on Alcoholism, effective Dec. 31, 1949. The New Haven office of the national committee has been closed and its affairs will be directed from national headquarters at 2 East 103rd Street, New York City. This step was based on an amicable agreement between the two organizations, which will continue to cooperate. The committee is now able to maintain an independent status and carry on its work on a national scale, utilizing the resources of various state and local organizations. To facilitate the election of a widely representative board of directors, the resignations of Yale Plan representatives have been accepted, but they will be considered for reelection as individuals. Mrs. Marty Mann continues as executive director and Yvelin Gardner as associate director. Colonel R. S. A. Dougherty is serving as treasurer and Mrs. Louis Knowlson as secretary and assistant treasurer.

Equipment for Polish Campaign Against Tuberculosis.—A first shipment consisting of 30 x-ray units left Rotterdam early in March for Poland, where they will be used in a national antituberculosis campaign to be carried out with the assistance of the United Nations International Children's Emergency Fund and the World Health Organization. The 30 units, manufactured in the Netherlands, were part of a total of 140 that will be provided. Tuberculosis is the most common disease in Poland, with an annual death rate of 50,000 and an estimated 280,000 cases of infection, WHO reported. Wartime conditions of destruction combined to double Poland's tuberculosis rate, which before the war was the second highest in Europe. Measures now being undertaken against tuberculosis include a mass vaccination campaign to be completed in Poland early this year. The campaign has been conducted by the Joint Enterprise, composed of UNICEF, Scandinavian relief societies, health ministries and WHO, as part of a program which now covers part of Europe, Asia, Africa and the Middle East. Vaccination will be continued by the Polish government after the Joint Enterprise campaign is ended. In addition, roentgen examinations will be offered as part of a national prevention program.

Research Funds and Fellowships in Radiology.—The National Research Council announces the availability of funds for fundamental research in the field of radiology made possible by the James Picker Foundation, established in 1947 by Mr. Picker and his family. Capital funds of the foundation now approximate $400,000. The announced objectives of the foundation are "to provide funds to foster research and broaden the scope of radiology." In 1950 $15,000 from income will be available for research. Special consideration will be given to fundamental work in radiology and its applied fields. The foundation has specifically requested that none of its funds be used to subsidize the development of radiologic equipment. It is expected that applications will be considered by the National Research Council's Committee on Radiology under the chairmanship of

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Dr. Eugene P. Pendergrass, Philadelphia. Final determination of the awards will be made by the directors of the foundation on the recommendation of the council, which has been designated as the scientific advisory body of the foundation. Applications for fellowships in radiologic research, with stipends of $3,000 to $5,000, depending on the qualifications and special circumstances of the applicant, will also be entertained. All applications available during the year beginning Jan. 1, 1951 will be entertained until September 15 and are not limited to citizens of or laboratories in the United States. Inquiries should be addressed to Secretary, Division of Medical Sciences, National Research Council, 2101 Constitution Avenue, Washington 25, D. C.

American Geriatrics Society.—This society will hold its annual meeting June 1-3 with headquarters at the Hotel Commodore, New York, under the presidency of Dr. Hollis E. Clow, White Plains, N. Y. The invited speakers include:

Otakar J. Pollak, Quincy, Mass., Role of Lecithin in the Development and Treatment of Atherosclerosis.
Joseph L. Decourcy, Cincinnati, Steroid Hormones in Geriatric Practice.
Grace Meads, Ph.D., Philadelphia, Application of Isotopes in Clinical Medicine.
Stanford W. Mulholland, Philadelphia, Genesis of Prostatic Enlargement.
Russell L. Cecil, New York, Senescence in Relation to Chronic Arthritis.
Howard A. Rusk, New York, Geriatrics and Rehabilitation.
Alfred Steiner, New York, Significance of Dietary Cholesterol in Coronary Arteriosclerosis.
Henry I. Russek, Staten Island, N. Y., Evaluation of Alcohol in the Symptomatic Management of Angina Pectoris.
Lawrence H. Beirer, Philadelphia, Limitations of Aspiration Biopsy of the Bone Marrow and the Diagnosis of Multiple Myeloma.
Emery A. Rovenstine, New York, Nerve Blocking in Management of Peripheral Vascular Obstruction.

The Saturday morning sessions will be held at the Home for the Aged, 121 W. 105th St. The afternoon program will be a symposium on "The Integration of Medical and Social Agencies in Community Planning for the Aged." The invited speakers will be Drs. Martin R. Steinberg, Martin Cherkasky and Robert S. Beckman of New York; Mrs. Amy Powell, Boston; Mrs. Helen Laye, Chicago, and Paul B. Maves, New Brunswick, N. Y. At the dinner Friday at 7:30 p. m. Dr. Willard O. Thompson, Chicago, will speak on "Endocrinology and Geriatrics." The guest of honor will be Dr. John Erdmann, New York. The meeting is dedicated to the memory of Dr. I. Leo Nascher, a graduate of New York University School of Medicine in 1885, who died Dec. 25, 1944. Dr. Nascher was made honorary president of the society in 1942.

Symposium on Chemical-Biologic Correlation.—The National Research Council will hold a two day symposium on chemical-biologic correlation in Washington on May 26-27. The meeting will include papers on the relation of structure of compounds to their biologic activities, panel discussions, and a session illustrating the operations of the center. Papers scheduled for the first session are: "The Toxicity and Parasiticidal Action of Aromatic Arsenicals in Relation to Their Structure," Dr. Harry Eagle, National Institutes of Health, Bethesda, Md. and George O. Doak, Ph.D., University of North Carolina School of Medicine, Chapel Hill; "Structure—Activity Relationships in Plant Growth Regulators," A. Geoffrey Norman, Ph.B., and Robert L. Weintraub, Ph.D., Chemical Corps, Frederick, Md.; and "Review of Structural Requirements for Sympathomimetic Drug Action," Alonzo M. Lands, Ph.D., Sterling Winthrop Research Institute, Rensselaer, N. Y. The second session will explain the work of the Chemical-Biologic Coordination Center. A panel discussion on antimalarials is scheduled for the evening session of the first day. Robert C. Elderfield, Ph.D., Columbia University, New York, will be the moderator. At the first session of the second day, papers will be read on: "Relation of Structures of Diphenyl Derivatives to Their Fungicidal Action," James G. Horsfall, Ph.D., Connecticut Agricultural Experiment Station, New Haven, Conn.; "Structural Changes in Plant Insecticides as Related to Insect Toxicity," Herbert L. Haller, Ph.D., U. S. Department of Agriculture, Washington, D. C.; and "Effects of Drugs on Physiologically Active Thio Systems," Maxwell P. Schubert, New York University College of Medicine, New York. At the last session of the symposium Harris L. Friedman, Ph.D., Lakeside Laboratories, Milwaukee, will present a paper on "The Influence of Isoteric Replacements on Biological Activity." A combined panel discussion on antimetabolites, carcinogenesis, and cancer chemotherapy will follow; Murray J. Shear, Ph.D., National Cancer Institutes, Bethesda, Md., will be the moderator. Those interested should register with the Symposium Committee, Chemical-Biologic Coordination Center, National Research Council, 2101 Constitution Avenue, N. W., Washington 25 D. C.

LATIN AMERICA

Maternal and Child Health Program.—The Pan American Sanitary Bureau, Regional Office for the Americas of the World Health Organization, has sent Dr. Federico Gomez, regional consultant in maternal and child health, on a trip through Latin America as part of a campaign to improve maternal and child health. He will gather information for a comprehensive, technical health program to reduce infant mortality. Dr. Gomez, formerly director of the Children's Hospital in Mexico City, will visit Mexico, Gautemala, El Salvador, Honduras, Costa Rica, Nicaragua, Bolivia, Paraguay and Brazil, where he will review with health officials maternal and child health problems and inspect the medical and public health facilities available.

FOREIGN

University Chair of Child Health.—The University of Sidney, Australia, is to have its first chair of child health with Prof. Lorimer H. Dods as director of its course in pediatrics. The instruction will include a 10 week practical course in child care at the Royal Alexandra Hospital for Children, the largest children's hospital in New South Wales. The infant mortality rate of the island is said to be the lowest in the world. In 1948 it was 27.76 in 1,000 live births.

Vienna Society for Psychotherapy.—The General Medical Society for Psychotherapy was founded January 10 at a meeting under the chairmanship of Dr. Viktor Frankl in the auditorium of the Physiologic Institute for the University of Vienna. The board of directors will be comprised of Prof. Otto Potzl, honorary president; Dr. Viktor Frankl, president, and Dr. Karl Nowotny, vice president. The advisory council will be comprised of Professors Hoff and Stransky and of Holzer and Urban (Graz and Innsbruck).

Advisory Board to Hebrew University.—A 16 man medical advisory board has been appointed to counsel and guide the newly established Hebrew University-Hadassah Medical School in Jerusalem on problems of curriculum, teaching personnel and research and to aid the Hadassah Medical Organization in its medical and public health work in Israel. The chairman of the board will be Harry Grundfest, Ph.D., associate professor of neurology, Columbia University College of Physicians and Surgeons, New York. Serving with Dr. Grundfest are: Dr. David Adlersberg, Mount Sinai Hospital, New York; Louis I. Dublin, Ph.D., Metropolitan Life Insurance Company, New York; Dr. Thomas D. Dublin, National Health Council, New York; Dr. Harry Eagle, National Institutes of Health, U. S. Public Health Service, Bethesda, Md.; Dr. Jonas S. Friedenwald and Abel Wolman, D. E., Johns Hopkins University School of Medicine, Baltimore; Dr. Jacob J. Golub, Hospital for Joint Diseases, New York; Drs. M. Ralph Kaufman, Paul Klemperer, Israel S. Wechsler, Louis Leiter and David Nachmansohn and David Rittenberg, Ph.D., all of Columbia University College of Physicians and Surgeons; Dr. Samuel Z. Levine, Cornell University Medical College, New York, and Dr. Charles F. Wilinsky, deputy health commissioner, Boston.

Marriages

Kendall Odelle Fields Jr., Columbia, S. C., to Miss Frances Mae Matthews of Moncks Corner, February 25.

John M. Maloney, Washington, D. C., to Miss Doris Mae Shinn of Metuchen, N. J., February 21.

Robert M. Richman, Larchmont, N. Y., to Miss Jeanne A. Barnett of Pleasantville, February 19.

Donald Hugh Ferguson, Charlottesville, Va., to Miss Gloria Etta Wallnau of Richmond, March 16.

Sidney H. Sachs, Cleveland, to Miss Marjorie Elaine Bell, of Shaker Heights, Ohio, February 25.

Edward J. Bacsik, Trenton, N. J., to Miss Catherine Repko in Villanova, Pa., January 31.

John Muir Rhame, Sumter, S. C., to Miss Mary Elizabeth Tyson of Florence, February 25.

Richard Bedor Nicholls to Miss Sylvia Yamalaki, both of Norfolk, Va., February 17.

Amy S. Barton to Mr. Irvin Blatt, both of Moorestown, N. J., February 17.

Jerry D. Silverman to Miss Phyllis Grant, both of Pittsburgh, March 9.

Deaths

George Henry Bunch ● Columbia, S. C.; born in Edgefield County, S. C., Nov. 20, 1879; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; past president of the South Carolina Medical Association, Columbia Medical Society and of the Tri-State Medical Association of the Carolinas and Virginia; member of the founders group of the American Board of Surgery; member of the Southern Surgical Association and Southeastern Surgical Congress; fellow of the American College of Surgeons; affiliated with the Columbia, Baptist and Providence hospitals; died March 6, aged 70, of myocardial failure.

Harold Levi Lawrence, Canton, Ohio; Ohio State University College of Medicine, Columbus, 1931; served during World War I; for many years associated with the U. S. Public Health Service as chief medical officer at the consulates and embassies in the Scandinavian countries, Germany, Austria, and Czechoslovakia and as a special consultant for health programs during World War I; in 1942 appointed chief of the divisions of epidemiology and venereal disease control of the Washington State Department of Health, Seattle; chief medical officer of the Veterans Administration; died in Aultman Hospital, March 12, aged 47.

Robert Milton Alexander, Paoli, Okla.; University of Georgia Medical Department, Augusta, 1900; member of the American Medical Association; died March 8, aged 80, of coronary thrombosis and myocarditis.

Harvey Montreville Andrew, Weston, W. Va.; Johns Hopkins University School of Medicine, Baltimore, 1915; member of the American Medical Association; died suddenly March 10, aged 63, of heart disease.

John Edward Attwood ● La Crosse, Kan.; College of Physicians and Surgeons, Medical Department Kansas City University, Kansas City, Kan., 1901; served as county coroner and as county health officer; on the staff of Hadley Memorial Hospital in Hays; died in St. Luke's Hospital, Kansas City, Mo., March 5, aged 74, of carcinoma of the stomach.

William Augustus Baker, Big Stone Gap, Va.; Louisville (Ky.) Medical College, 1891; member of the American Medical Association; died February 14, aged 86.

Edward Woodruff Banta ● New York; Columbia University College of Physicians and Surgeons, New York, 1900; served during World War I; died in St. Luke's Hospital March 12, aged 73, of bronchopneumonia.

Frank Marion Barker, Monrovia, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; served overseas during World War I; formerly practiced in Grosse Pointe, Mich., where he was on the staff of Cottage Hospital; died February 20, aged 75, of bronchopneumonia.

Isaac Barnes, Whitwell, Tenn.; Chattanooga (Tenn.) Medical College, 1908; died in Newell Hospital, Chattanooga, February 20, aged 67, of cerebral thrombosis.

William Henry Bell, Decatur, Ill.; Rush Medical College, Chicago, 1893; member of the American Medical Association; past president and secretary of the Macon County Medical Society; affiliated with Decatur and Macon County Hospital and Wabash Employes' Hospital; died February 25, aged 78.

Thomas Sumter Bratton ● Colonel, U. S. Army, retired, Atlanta, Ga.; Medical College of the State of South Carolina, Charleston, 1890; fellow of the American College of Surgeons; served during the Spanish-American War, Philippine Insurrection and World War I; entered the Medical Corps of the U. S. Army on Nov. 2, 1893; retired Aug. 31, 1932; died in Georgia Baptist Hospital, March 10, aged 81, of coronary sclerosis.

Emmett Ezra Brown ● Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1917; also a graduate in pharmacy; served during World War I; died in Miami, Fla., recently, aged 61, of cerebral hemorrhage.

James Henry Burrows ● Williamsport, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1920; served during World War II; affiliated with the Veterans Administration; died in the Veterans Administration Hospital in Phoenix, Ariz., March 6, aged 53.

William Vare Chalmers-Francis, Los Angeles; M.R.C.S., England and L.R.C.P., London, 1900; served during World War I; affiliated with the Hospital of the Good Samaritan for many years; died March 4, aged 73, of coronary disease.

● Indicates Fellow of the American Medical Association.

George Walkington Colby ● New York; Long Island College Hospital, Brooklyn, 1896; University of Pennsylvania Department of Medicine, Philadelphia, 1896; died in New York Hospital March 13, aged 75, of coronary thrombosis.

Clifford Lawrence Dailey, Denver; St. Louis University School of Medicine, 1943; member of the American Medical Association; affiliated with St. Joseph's Hospital, where he died March 3, age 32, of chronic nephritis and hypertension.

James Vincent De Leonardis ● Newark, N. J.; Maryland Medical College, Baltimore, 1911; Hahnemann Medical College and Hospital of Philadelphia, 1916; served as chief medical examiner for the state athletic commission; member of the staff of St. James Hospital; died March 6, aged 63, of carcinoma of the stomach.

Charles Tisdale Ecberman ● Muskegon, Mich.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1901; served as county physician; affiliated with Hackley and Mercy hospitals; died March 4, aged 74, of arteriosclerotic heart disease.

Andrew Green Foord ● Kerhonkson, N. Y.; Long Island College Hospital, Brooklyn, 1897; an Associate Fellow of the American Medical Association; for many years medical superintendent of Nonkanahwa; died March 16, aged 74, of cerebral hemorrhage.

William Maurice Fresh ● Hickory, N. C.; Medico-Chirurgical College of Philadelphia, 1906; died March 5, aged 68, of carcinoma of the prostate.

George Herbert Fulton, Malden, Mass.; Halifax Medical College, Halifax, N. S., Canada, 1883; died February 11, aged 97.

Germanus Elvery Gardner, Barberton, Ohio; Starling Medical College, Columbus, 1891; affiliated with the Citizens Hospital, where he had been a member of the board of directors; died February 28, aged 83, of cerebral thrombosis.

Donald Buie Garstang ● Los Angeles; Washington University School of Medicine, St. Louis, 1904; member of the American Urological Association; served during World War I; formerly practiced in St. Louis, where he was assistant in genitourinary surgery at his alma mater from 1914 to 1916 and on the staff of Mullanphy Hospital; on the staff of Queen of Angels Hospital; died March 5, aged 70, of coronary occlusion.

Oliver Prescott Hamilton, Boise, Idaho; Northwestern University Medical School, Chicago, 1907; member of the American Medical Association; served during World War I; county physician; on the staffs of St. Luke's Hospital and St. Alphonsus Hospital; died March 12, aged 67, of coronary thrombosis.

John Andrew Hardenbergh, St. Petersburg, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1905; member of the American Medical Association; past president of Pinellas County Medical Society; served during World War I; on the staffs of St. Anthony's Hospital and Mound Park Hospital, where he died March 1, aged 71, of emphysema.

John Doherty Hinchman, Richmond, Va.; Medical College of Virginia, Richmond, 1907; member of the American Medical Association; died February 23, aged 65, of coronary thrombosis.

Harold Carlton Ingraham, New York; University and Bellevue Hospital Medical College, New York, 1914; member of the American Medical Association; life member of the New York Obstetrical Society; director of obstetrics and gynecology at Lincoln Hospital, where he was vice president of the medical board; for many years on the staff of the New Rochelle (N. Y.) Hospital; died in Pelham Manor February 25, aged 60, of acute coronary occlusion.

William Matthews Keen, Jersey City, N. J.; University of the City of New York Medical Department, New York, 1891; member of the American Medical Association and the Medical Society of the State of New York; died March 5, aged 85, of arteriosclerosis.

William Gottlieb Kinsley, Robesonia, Pa.; Boston University School of Medicine, 1914; formerly deputy coroner; served during World War I; died in the Veterans Administration Hospital, Lebanon, February 12, aged 57, of heart disease.

David Samuel Knox, Abbeville, S. C.; University of Georgia Medical Department, Augusta, 1900; died February 9, aged 72.

William Edwin Lasell, Barre, Vt.; University of Vermont College of Medicine, Burlington, 1891; served during World War I; member of the American Medical Association; for many years affiliated with Barre City Hospital; died in Putnam Memorial Hospital, Bennington, February 27, aged 82, of cerebral hemorrhage.

Ernest John Lessenger ● New London, Iowa; Drake University College of Medicine, Des Moines, 1913; formerly vice president of the Mississippi Valley Medical Society; died in Rochester, Minn., March 8, aged 63.

Floyd D. Lewis, Concord, Calif.; Willamette University Medical Department, Salem, Ore., 1909; member of the American Medical Association; died in February, aged 64.

Roy Christian Lintner ● Ludington, Mich.; Rush Medical College, Chicago, 1924; chairman of the Paulina Stearns Hospital staff; formerly physician at the state reformatory at Ionia; died March 12, aged 56, of heart disease.

Harry R. Lovellette, Keensburg, Ill.; Hospital College of Medicine, Louisville, Ky., 1893; member of the American Medical Association; died February 28, aged 80.

Burr W. Macfarland, Trenton, N. J.; Jefferson Medical College of Philadelphia, 1888; member of the American Medical Association; died February 23, aged 82, of cerebral hemorrhage and fracture of the neck of the femur due to a fall.

William Seagrove Magill, Berlin, N. Y.; Université de Paris Faculté de Médecine, France, 1894; died in the New Jersey State Hospital, Trenton, February 27, aged 83, of traumatic shock, and fracture of the left femur due to a fall.

Otto Maier ● New York; Bellevue Hospital Medical College, New York, 1891; also a graduate in pharmacy; fellow of the American College of Physicians; died in Lenox Hill Hospital March 9, aged 84.

Frederic Grantham Meynen ● Garden City, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1922; fellow of the American College of Surgeons; served on the faculty of New York University College of Medicine; consulting surgeon at the Queens General and Mary Immaculate hospitals in Jamaica; died March 3, aged 51, of coronary thrombosis.

Roy Benson Miller ● Parkersburg, W. Va.; Medical College of Virginia, Richmond, 1903; honorary life member and past president of the West Virginia State Medical Association and the Parkersburg Academy of Medicine; fellow of the American College of Surgeons; served as chief of staff at the Camden-Clark Memorial Hospital; for many years surgeon for the Baltimore and Ohio Railroad; died March 18, aged 72, of cerebral hemorrhage and diabetes mellitus.

Clarence Wilbur Milligan, Springfield, Ill.; St. Louis University School of Medicine, 1908; member of the American Medical Association; formerly health officer of Springfield; served as trustee and president of the Springfield park board; for many years president of the Illinois Association of Park Districts; died in St. John's Hospital February 17, aged 64.

Roy Melloy Montfort, Danville, Ill.; Bennett Medical College, Chicago, 1915; also a graduate in pharmacy; member of the American Medical Association; served during World War I; affiliated with Lake View Hospital, where he died February 21, aged 60, of cerebral hemorrhage, cirrhosis of the liver, diabetes mellitus and pneumonia.

Sidney P. Mosher, Sioux City, Iowa; Physio-Medical College of Indiana, Indianapolis, 1886; died March 1, aged 88.

Hugh Kingsbury Murphy, Mulberry, Fla.; Hospital College of Medicine, Louisville, 1902; past president of the Polk County Medical Society; served as mayor and on the city council for many years; a member of the school board; died March 1, aged 75.

David Nathan ● Norristown, Pa.; McGill University Faculty of Medicine, Montreal, Canada, 1906; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association, Association for Research in Nervous and Mental Disease and the International League Against Epilepsy; affiliated with Pottstown (Pa.), Montgomery and Sacred Heart hospitals; died February 26, aged 72.

Newman J. Neill, Lebanon Junction, Ky.; Chicago College of Medicine and Surgery, 1909; member of the American Medicall Association and of the American Association of Industrial Physicians and Surgeons; served with the U. S. Public Health Service during World War I and was medical director of the Kentucky Ordnance Works during World War II; died February 10, aged 68.

James Vincent Nespeco, Bridgeport, Conn.; Georgetown University School of Medicine, Washington, D. C., 1932; member of the American Medical Association; a member of the medical staff of St. Vincent's Hospital; died March 1, aged 43, of coronary thrombosis.

Robert Cronley Noble, Midland, Texas; University of Vermont College of Medicine, Burlington, 1930; certified by the National Board of Medical Examiners; member of the American Medical Association; formerly practiced in Northampton, Mass., where he was city physician for one term and was on the staff of the Cooley Dickinson Hospital; died February 18, aged 44.

Oliver U. O'Neill, Ironton, Ohio; University of Louisville (Ky.) Medical Department, 1897; member of the American Medical Association; served as coroner of Lawrence County and health commissioner in Ironton; formerly affiliated with the Charles S. Gray Deaconess Hospital; died February 24, aged 79, of influenza and arteriosclerosis.

John Atkins Payne, East Setauket, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1902; served during World War I; died March 10, aged 74.

Henry Woodfin Phillips, Norfolk, Va.; University College of Medicine, Richmond, 1897; member of the American Medical Association; recently awarded a certificate of merit by the Medical Society of Virginia for having practiced medicine for more than 50 years; died February 21, aged 74.

Oliver Henry Pinney ● Captain, U. S. Army, retired, Lexington, Ky.; Medical College of Ohio, Cincinnati, 1903; formerly a medical missionary in West Africa; served during World War I; entered the medical corps of the U. S. Army as a captain in 1920; retired Oct. 19, 1925 for disability in line of duty; from 1927 to 1937 on the staff of the student health service at the University of Kentucky; died March 9, aged 71, of arteriosclerotic heart disease and hypertension.

Joseph Clegg Ross, Chicago; Bennett Medical College, Chicago, 1915; member of the American Medical Association; formerly alderman of the 40th ward and member of the Illinois liquor control commission; died March 26, aged 58, of arteriosclerotic heart disease and hypertension.

Herman Louis Sarvela, Hancock, Mich.; University of Illinois College of Medicine, Chicago, 1912; member of the American Medical Association; president of the Houghton-Keweenaw-Baraga Counties Medical Society; served on the board of education; affiliated with St. Joseph's Hospital; died in Duluth, Minn., February 15, aged 66, of carcinoma of the pancreas.

Maurice R. Schwartz, Fall River, Mass.; Jefferson Medical College of Philadelphia, 1907; member of the American Medical Association; died February 19, aged 67.

James S. Tankersley, Ellijay, Ga.; Atlanta Medical College, 1884; member of the American Medical Association; for many years physician for the Louisville and Nashville Railroad; died in a hospital at Canton February 11, aged 90.

Edward Taylor, New York; George Washington University School of Medicine, Washington, D. C., 1908; for many years medical inspector in the Garden City (N. Y.) public school system; at one time professor of tropical diseases at the University of Vermont College of Medicine, Burlington; died February 18, aged 65.

Joseph Turner Thomas Jr., Detroit; Meharry Medical College, Nashville, Tenn., 1929; affiliated with Bethesda and Edyth K. Thomas Memorial hospitals; was shot and killed February 25, aged 48.

William Dallas Walker ● Ashley, Ill.; St. Louis University School of Medicine, 1937; served during World War II; affiliated with the Good Samaritan Hospital in Mount Vernon and St. Mary's Hospital in Centralia; instantly killed in an automobile accident February 22, aged 37.

Arthur Leo Weber ● Upland, Calif.; Northwestern University Medical School, Chicago, 1910; fellow of the American College of Surgeons; member of the American Association of Industrial Physicians and Surgeons; member and past president of the staff of San Antonio Community Hospital; died March 8, aged 66, of coronary occlusion.

Ralph H. Wheeler ● Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1889; an Associate Fellow of the American Medical Association; affiliated with Alexian Brothers' Hospital; died in Winona, Minn., March 10, aged 86, of cerebral hemorrhage.

Luvia Margaret Willard ● Jamaica, N. Y.; Cornell University Medical College, New York, 1900; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; fellow of the American College of Physicians; formerly affiliated with the Jamaica Hospital; died in Mount Vernon (N. Y.) Hospital March 8, aged 68, of arteriosclerotic heart disease.

Frank J. Zuehlke, Chicago; Bennett Medical College, 1910; died March 14, aged 63, of cerebral hemorrhage and hypertension.

Foreign Letters

PARIS

(From a Regular Correspondent)

March 1, 1950.

Streptomycin Therapy During Pregnancy

The treatment of tuberculosis in the pregnant woman with streptomycin gave rise to a debate at one of the last meetings of the National Academy of Medicine, after a report by Prof. Et. Bernard, B. Kreis and their associates. These authors treated 14 tuberculous women, 6 of whom were tuberculous before pregnancy and 8 who were found to be tuberculous in the course of pregnancy. Streptomycin was used in 3 cases before the fourth month of pregnancy and in 11 between the fourth and seventh months. Three patients were given dihydrostreptomycin and the others streptomycin. The daily dose was 1 Gm. in 4 cases, 1.50 Gm. in 8 and 2 Gm. in 2; the total dose varied from 20 to 180 Gm. In 4 cases of miliary or nodular tuberculosis streptomycin was the sole therapeutic agent. In 5 cases collapse therapy had preceded pregnancy, and in 5 patients streptomycin therapy had preceded the pneumothorax. In 13 patients the delivery was normal. One woman was prematurely confined by 15 days. In an advanced case a spontaneous abortion (fifth month) occurred four days after the beginning of streptomycin therapy; three months later she died. None of the 13 other patients experienced an evolutive outbreak immediately or early after delivery; 2 of them became pregnant again without untoward incident. The tolerance to streptomycin was good. As regards the 13 children, 11 have developed normally, with no pathologic observations in the auditory system; 1 died within a month from mastoiditis, and the premature baby died within 48 hours after delivery. Et. Bernard and his associates think that these results prove that streptomycin is not toxic for the fetus. With the collaboration of Mrs. Grumbach of the Pasteur Institute, they have studied the transplacental passage of the antibiotic in 12 women who were given, in the course of labor, 0.50 Gm. of dihydrostreptomycin. The examination of the blood of the umbilical cord, taken immediately after delivery, revealed the constant presence of the antibiotic. The average rate observed between 43 and 130 minutes after the injection amounted to 5.7 units, results agreeing with those of Levin, Carr and Heilmann. Et. Bernard and his associates believe that this placental barrier indicates the harmlessness of streptomycin for the fetus. Professor Moulonguet has some reservations regarding the children's future and recalled the recent report before the Society of Otorhinolaryngology of a case of deafness following treatment of a child in this manner. He thinks that, on account of the difficulty of making an acoumetric examination in young children, one cannot immediately state definitely that streptomycin therapy during pregnancy is harmless. For this reason, Et. Bernard proposes avoiding administration of dihydrostreptomycin to pregnant women, reserving the streptomycin treatment for conditions with precise indications.

Mortality from Cancer in France

P. Denoix and L. Mausol of the Cancer Section of the National Institute of Hygiene studied the mortality from cancer in 1948. Sixteen per cent of the deaths were declared to be due to cancer; this disease caused the death of 165 persons per 100,000 inhabitants as against 137 in 1936. The increase of the cancer mortality rate is related to the increase of average life and also to the greater accuracy of diagnosis. In 1930 tuberculosis killed more persons than cancer; in 1948 the latter occurred twice as frequently. It kills relatively more men than women, though the number of deaths for men (32,939 declared and 35,480 probable) is below that for women (34,766 declared and 37,485 probable). In 100 deaths from cancer there are 48 men and 52 women; compared with the general mortality, 17.1 per cent of the deaths are from cancer for women and 14.1 per cent for men. These figures are related to the total population and general mortality; if these factors are eliminated, it appears that of 100,000 men 177 die of cancer and of 100,000 women 156 die of cancer. If these figures are compared with the corresponding ones for 1930 (127 for men and 147 for women), an inversion unfavorable to men, occurring in 1944-1945 is noted. A higher mortality for women has remained for only the age group 30-44 years. Cancer kills especially aged persons in an increasing proportion; in 1936, of 100,000 deaths from cancer 5.3 were in the 30-44 year age group and 44.8 in the 65-79 age group. In 1948 the rate in the former group was 4.3 and the latter 47.1. The authors have also studied the average age at death according to the site. For cancer in all locations the age was 64 years and 2 months; for cancer of the nervous system, 51 years; of the female genital organs, 59 years and 6 months; of the respiratory system, 60 years and 6 months; of connective and endocrine tissue, 61 years; of the buccal cavity and pharynx, 62 years; of the breast, 62 years and 6 months; of the digestive system, 66 years; of the skin, 69 years, and of male genital organs, 69½ years. The authors noted that cancer in a given site (nervous system, buccal cavity, pharynx, skin) causes death earlier in men than in women.

ITALY

(From a Regular Correspondent)

FLORENCE, Feb. 27, 1950.

Therapy of Bronchial Asthma

Dr. D'Asaro reported to the medicosurgical association of the Romagna on a new method he has used successfully for checking rapidly an attack of bronchial asthma. The method consists of pushing up slightly with one or both hands the abdominal viscera. The hands may be placed at any level of the abdomen, on one side or both sides simultaneously (e. g., at the level of the two costal arches between the prolongation of the parasternal and midclavicular lines, or at the lower abdomen), in dorsolateral recumbent, in standing or in sitting position. After some minutes, sometimes after only a few seconds, the patient feels relieved and the breathing becomes easy, while the sibilant rales and ronchi, which at the onset were heard diffusely on auscultation over the whole respiratory region, are no longer noticed. The method can be taught to the patient, who can execute it himself at the start of the attack, when he first has a sense of constriction of the thorax and abdominal swelling, and consequently may succeed in checking the attack in its initial stage.

The method may be employed easily and comfortably and is definitely effective in all forms of bronchial asthma, in the predominantly vagal as well as in the lymphatic type. The use of any drug employed at present for controlling the asthmatic attack, either at the peripheral or central point, becomes dispensable. This method does not cure asthma; it should be repeated, therefore, at the onset of each attack. After a few days of treatment, longer intervals between attacks are observed, owing partly to the psychic tranquility resulting from the patient's having a method at hand to control the attack and partly to the restoration of a certain neurovegetative equilibrium following the frequent inhibition of the bronchoconstrictor peripheral mechanism.

Death of Prof. Amedeo Herlitzka

Prof. Amedeo Herlitzka, who taught physiology at the University of Turin, died. While still a student working in Prof. Giulio Fano's laboratory, he started the physiologic investigation on ontogenic development. He succeeded in obtaining, for the first time, full living embryos of every one of the two first

blastomeres, which were isolated with a fine technic from the egg of Triton. At the Institute of the famous Prof. Luciani in Rome he studied the differentiation of the intestinal cells during the development of the embryo, subjecting to severe criticism the doctrine on the development of the embryo then in vogue. Afterward he entered the physiology laboratory of Prof. Angelo Mosso, in Turin, where for 50 years he was active as a physiologist and a teacher. He was one of the first Italian promoters of physiological chemistry as fundamental in the study of medicine.

After the death of Professor Mosso, Professor Herlitzka succeeded to the chair of physiology at the University of Turin, from which he retired last year on reaching the age limit.

Numerous publications and scientific papers reveal the intellectual versatility of this great investigator. He was a pioneer in the field of experimental embryology. His studies on the organic colloids were very important. In the field of applied physiology, Professor Herlitzka studied the importance of the physiologic selection of apprentice pilots, at a time (1916) when the study of the organic functions of flyers had hardly begun. The result of his studies were reported in the volume "Physiology and Aviation," which is one of the first monographs on the subject. Of importance, also, is his research on human work and fatigue, published in "Physical Evaluation of Athletes," and in his treatise "Physiology of Human Work," first published in Spanish and then in Italian (1948).

TURKEY

(From a Regular Correspondent)

ANKARA, Feb. 10, 1950.

Brucellosis in Turkey

At the International Congress of Comparative Pathology held in Istanbul in May 1949, Said Bilal Golem, D. V. M., of the Ankara Refik Saydam Institute of Hygiene reported on brucellosis. The first case, confirmed by laboratory test, was diagnosed in 1915 by Prof. Dr. Hussameddin Kural and Dr. Mahmoud Sabit Akalin at the Bosphorus-Kuleli Military Hospital in Istanbul. During the battle of the Dardanelles (Gallipoli, 1915) a veterinary became seriously ill after drinking raw goat's milk; the laboratory test at the hospital in Istanbul revealed the presence of brucella. Further investigations at other Istanbul hospitals confirmed that soldiers from the Gallipoli front also suffered from brucellosis. In 1917, 2 cases of brucellosis occurred in Eskişehir and in 1931, 2 cases at Prof. Dr. Abdulkadir Noyan's clinic at the Gülhane Hospital in Istanbul. The first cases of human and animal brucellosis in Ankara were discovered by Gen. Sureyya Aygün, professor of veterinary medicine. In the same year a doctor of veterinary medicine discovered and confirmed by laboratory test Bang's disease in the cattle at the Yalova, Karacabey and Baltaci state farms and at the government farm and resorted to vaccination. Reports from Ankara, Izmir, Istanbul, Diyarbekir and other towns indicated that brucellosis was on the increase. According to the 1930-1949 statistics of the Ministry of Health there have been 209 cases resulting in 7 deaths; in 67 per cent the disease occurred in summer and autumn. It is believed that many cases are not reported or are not rightly diagnosed. The death rate was 3.3 per cent. Of the 209 patients, 140 (71.3 per cent) were men and 60 (28.7 per cent) women. The ages ranged from 2 to 76 years in male patients and 8 to 51 years in female patients. Of 13 patients in Ankara 4 were microbiologists, 4 were veterinarians, 3 were slaughterhouse butchers, 1 was a cowboy and 1 a physician.

The 178 agglutination tests by Dr. Necmeddin Akyay at the Central Institute of Hygiene revealed positive reactions in 118 farmers, 25 workmen, 19 soldiers, 8 children, 5 women and 3 civil servants. The 4 bacteriologists contracted the disease at the laboratory, the 4 veterinarians through contact with animals and the physician by taking blood from a patient. In the cattle that infected the cowboy, both Brucella melitensis and Brucella abortus were present. Of the twenty-two types of bacilli recovered from the patients only one proved to be Brucella abortus. These cultures were sent to the Michigan State College, School of Veterinary Medicine, Brucella Research Center, and confirmed by Prof. Forest Huddleson. Investigation revealed that the patient from whom Brucella abortus was recovered was an immigrant.

The animals in Turkey that harbor brucella organisms are goats, sheep, cattle and buffalos. Formerly table butter used to be made from yoghurt; now the raw milk is made into butter by churning. Turkish people never drink unboiled milk; even the milk that comes from the three pasteurization plants of the principal cities is boiled. Half of the country's milk produce is consumed as yoghurt, which is made from boiled milk to which a leaven is added. Yoghurt is consumed in almost every household all the year round.

That the agglutination tests revealed the presence of Brucella melitensis in the blood of the veterinary on the cattle-breeding ranch and also in the cattle of the ranch is evidence that this organism is responsible for both human and animal brucellosis. In forty-nine of Turkey's sixty-three provinces the presence of human brucellosis has been ascertained and organisms were recovered from animals; in the remaining fourteen provinces the situation could not be determined because of insufficient facilities. The discovery of animal brucellosis on cattle-breeding ranches and on the government farm has led to the strict enforcement of precautionary measures.

Milk, cream, butter and white cheese are responsible for human brucellosis in urban communities. A truck driver taking the milk from the farms to a dairy in Ankara frequently sampled the raw milk and in consequence became seriously ill with brucellosis. A high official and his wife ascribed their illness to table butter.

Up to 1942 the late Dr. Osman Serefeddin Çelik of Istanbul found 278 (7.9 per cent) positive brucella agglutination reactions in the 3,511 serum samples that had come to his laboratory for the Wassermann test. Investigation of 1,104 serums at the Ankara Refik Saydam Institute of Hygiene revealed that of 555 drafted young men of healthy appearance, 24 (4.3 per cent) had positive brucella agglutination reactions, 16 at a titer of 1:20, 3 at 1:40, 1 at 1:80, 2 at 1:160 and 2 at 1:320; the 549 serums for the Wassermann test of 298 men and 251 women revealed a brucella-positive reaction in the blood of 43 (7.6 per cent), 31 at a titer of 1:20, 6 at 1:40, 4 at 1:80, 1 at 1:160 and 1 at 1:320. Dr. Necmeddin Akyay of the same institute investigated the blood of 1,250 persons, 672 men and 578 women, and found positive brucella agglutination reactions in 180 (14.4 per cent), 77 at a titer of 1:50, 65 at 1:100, 27 at 1:200, 6 at 1:400 and 5 at 1:800. Results are different because Dr. Bilal Golem used Stableforth's standard agglutination method by which the results are read with the unaided eye; Dr. Akyay worked with antigen diluted at least three times, and the results were read with the agglutinoscope.

Brucella coagglutination in human beings elicited positive reactions at titers of 1:20 to 1:160, when combined with tularemia at titers of 1:160 to 1:320; brucella coagglutination in horses, mules and donkeys was positive at titers of 1:20 to 1:320, when combined with tularemia, at titers of 1:10 to 1:80; in cattle, buffalos and goats brucella coagglutination elicited titers of 1:20 to 1:320 and, combined with tularemia, titers of 1:10 to 1:80.

These experiments revealed that in a combination of brucella and tularemia some serums give a positive reaction of the same titer. Wesley Eisele, Norman B. MacCullough, Grace A.

Beal and William Rottschaffer observed that in persons vaccinated against cholera, brucella nonspecific agglutination results, which is confirmed by these experiences.

Hitherto melitin and abortin were used for control in brucella allergy, but the Refik Saydam Institute of Hygiene has recently prepared a nonspecific antigen which is now being used. The preparation is as follows: The dried brucella organisms are crushed and together with protein are dissolved in saline solution and, according to the nitrogen content, are standardized on infected animals; the product is of the same type as Forest Huddleson's brucellergen and has been forwarded to all the larger Turkish laboratories. Brucella organisms have been treated with chloroacetic acid according to the method used by A. Boivin and L. Mesrobeanu to produce a glucidolipic complete antigen. Specialists have used it for the treatment of brucellosis and have obtained good results; 9 of the 10 patients treated by Dr. Sabahaddin Payzin completely recovered.

Death of Dr. Celal Cansun

Dr. Celal Cansun, microbiologist at the Refik Saydam Institute of Hygiene, Ankara, died in November 1949, aged 38, of tumor of the brain, in the United States, where he had been sent for treatment. As chief and bacteriologist of the Elaziz Leprosarium Dr. Cansun experimented with prophylaxis, intensive therapy and direct transmission of cutaneous leishmaniasis by vaccinating himself with material from lesions on the leg and hand of a member of the household. His book on leprosy was published shortly before his death. Dr. Cansun was director of the antigen department of the Institute and was noted for his work on diphtheria toxin.

SWITZERLAND

(From a Regular Correspondent)

GENEVA, Feb. 20, 1950.

Meeting of Executive Board of WHO

The Fifth Session of the Executive Board of the World Health Organization was held in Geneva Jan. 16-Feb. 2, 1950, under the chairmanship of Sir Arcot Mudaliar, vice-chancellor, University of Madras. The Executive Board approved the building plan for a permanent place of WHO in Geneva, for which the Swiss Government has promised a contribution of $750,000.

The question of the resignation of URSS, Ukranien, Bielorussia and Bulgaria was forwarded to next general assembly. The finances of WHO were discussed; 18 per cent of the 1948 budget and 27 per cent of the 1949 budget, representing $870,000, are still not paid.

The board considered in detail the proposed program for 1951. It decided to stimulate demonstrations for control of rabies in Egypt and Israel. A new serum, prepared with viruses cultivated on embryonated eggs, gives the dog a stronger and longer immunity than all other serums used till now. Concerning the control of malaria, the members of the board mentioned the results which were obtained with new methods using dichlorodiphenyltrichloroethane (DDT); particularly in Brazil, the percentage of disease has decreased.

After emphasizing the importance of infant aid (in collaboration with United Nations International Children's Emergency Fund, UNICEF), of nutrition problems and of schistosomiasis (which, universally, affects 114 million persons), the board recognized the report on the BCG campaign in Europe. By the end of 1949, about 18 million persons had been examined; 7,540,000 persons showed positive reactions and 8,436,000 had been vaccinated.

The specialists in psychiatry insisted on the incorporation of mental health in the WHO activity in the realm of public health. They called attention to the fact that this point has been too much neglected by the ministries of public health of most countries.

Many campaigns for the control of venereal diseases are made now in different countries. It has been decided to set up an international regulation of health in order to control venereal diseases. An international meeting for the serologic diagnosis will probably be organized in 1952.

After having approved the proposed budget of $360,000 for the program of WHO in 1951, the board especially recommended that the organization deal first with developing public health services in all countries and with extending the personal health education. The Third World Health Assembly will be held in Geneva in June 1950.

SWEDEN

(From a Regular Correspondent)

BODEN, March 12, 1950.

An Experiment in Health Control

In Stockholm Dr. Sture Österlind has started an experiment in health control. He makes an examination of about 1,000 persons twice a year. His material consists of 300 employees in a clothing establishment, whose examination is with the permission of the employer, and of 700 other interested persons, willing to pay 30 Swedish crowns for the examination. Dr. Österlind makes an examination of the same type that is used by the life insurance companies, but he includes a fluororoentgenogram of the lungs, gynecologic examination and proctoscopy. A red blood cell count, blood smear and sedimentation test are made. The urine is tested on protein and reducing substance and examined microscopically. Dr. Österlind also makes a polarographic examination of the blood serum by a special method, which he says has proved satisfactory.

The examination rather closely follows the scheme used in the Strang Clinic in New York and the results are similar. Dr. Österlind thus found that 60 persons out of 100 had some defect in need of treatment (e. g., diabetes, peptic ulcer). Cancer was found in 2.2 per cent.

Importation of Austrian Physicians

A Swedish state delegation recently visited Austria to study medical education there. The delegation found that there existed in Austria an excess of physicians. Austria has about 12,000 physicians and Sweden only 4,500 for nearly the same population. According to the delegation a restricted number could be transferred to Sweden after careful examination.

The publishing of the report has aroused discussion. The Swedish Medical Association (Sveriges Läkarförbund), representing about 4,300 Swedish physicians, believes the need of importation is not clearly demonstrated. The actual difficulties in Swedish medical care do not depend on scarcity of physicians exclusively but also on scarcity of other categories of personnel. The association points out the need of a careful and continuous supervision of the resources of personnel available for medical care.

The Association of Swedish Junior Physicians (Sveriges Yngre Läkares Förening, "SYLF") representing the majority of subordinate hospital physicians, has also stressed the need of a careful examination if a shortage of physicians really exists in Sweden. SYLF believes that in many places there is an excess of physicians, which could be mobilized for such districts that have need of a doctor. The lack of physicians in psychiatric wards can be counteracted by an amelioration of the employment conditions in this department of hospital care. SYLF also wants a restriction of voluntary service in the university clinics. A large number of young doctors prefer a voluntary unpaid service in such clinics before going to a paid service in the country where their service is wanted.

The state medical board, under the leadership of Axel J. Höjer, the originator of the importation plan, has recommended that 100 Austrian physicians be brought over in the first group.

DENMARK

(From a Regular Correspondent)

COPENHAGEN, Feb. 25, 1950.

Periodic Health Examinations

In 1944, the Hygiene Committee of the Danish Medical Association issued a memorandum on periodic health examinations. In 1945 contacts were made with various persons and bodies with reference to the realization of such a scheme, and it was decided that it should be extended tentatively to some 5,000 persons of both sexes over the age of 40. They were to be examined by their own doctors on two occasions with an interval of a year between. The examinations were to consist of recording previous illnesses, making an ordinary clinical examination (including exploration of the rectum and a gynecologic examination), determination of the hemoglobin percentage, Wassermann test and a search for signs of tuberculosis.

When this scheme was put into practice, the 5,000 figure was reduced to 2,814, and among the 414 doctors taking part, there were 86 who examined only 1 patient each and 327 who did not examine more than 10 patients each. The Wassermann testing was also not as complete as planned. In spite of such shortcomings, some interesting information emerged from this experiment in preventive medicine. For example, it was found that the frequency of deafness among men was four times as great among factory workers as among office workers and teachers; and it would seem that about three quarters of the cases of deafness among factory workers could be traced to industrial noises.

An editorial published on this subject in a recent number of the *Journal of the Danish Medical Association* discusses the wider implications of this scheme, the results of which Dr. Erik Trier has analyzed. It is admitted that there are not enough doctors in Denmark to examine a million and a half adults over the age of 40 every year. There is also the enormous cost to be considered. But, it is urged, such a scheme is well worth while. Fortunately, there are the useful experiences of Dublin, Fisk and Kopf in the United States and the findings of L. D. Bristol (Value of Health Examinations in Industry, J. A. M. A. 128: 627 [June 30] 1945) to serve as a guide.

Hepatitis Among Syphilitic Patients

Only a few years ago the development of hepatitis in cases of syphilis treated with arsphenamine was regarded as indicating arsphenamine poisoning of the liver or the outcome of diminished resistance to infection with epidemic hepatitis. In 1943, it was suggested by MacCallum that hepatitis develops in syphilitic patients treated with arsphenamine because ineffectively sterilized needles convey infection from one patient to another. In 1945 Iversen, a Dane, drew attention to the importance of hospital infections in such cases, but at that time administrative difficulties prevented radical improvements in the aseptic technic of intravenous injections. In 1948, P. V. Marcussen, also of Denmark, showed that, in a Danish clinic for venereal diseases during the period 1939-1947, hepatitis developed in 6 to 7 per cent of the syphilitic patients treated with arsphenamine. At least 4 per cent of these cases represented inoculation hepatitis in his opinion, which he substantiated by comparing the dates of intravenous injections with the dates of the appearance of hepatitis.

In the *Journal of the Danish Medical Association*, Feb. 9, 1950, Marcussen has published some striking figures. From Jan. 1, 1948, the technic of arsphenamine injections was improved. He describes in detail the technic employed at his clinic before this date and then gives an account of the numerous precautions which have since then been taken to assure aseptic technic. During the 17 months following this reform there has been only one instance of jaundice among the syphilitic patients treated in his clinic, and this case could be explained as the outcome of obstruction of the bile passages by gallstones. There was a slight fall in the incidence of epidemic hepatitis in Copenhagen during the same period, but the number of syphilitic patients treated in the clinic was approximately the same as the number treated before 1948, and Marcussen feels justified in claiming that the immunity to hepatitis recently observed among his syphilitic patients can be traced to scrupulous attention to asepsis throughout every step of intravenous injections.

ARGENTINA

(From a Regular Correspondent)

BUENOS AIRES, March 29, 1950.

Outbreak of Yellow Fever in Bolivia

Last February cases of yellow fever were found in the south of the Republic of Bolivia (in Sucre and Cochabamba). This epidemic was due to an epizootic of monkeys spread to southern zones normally undamaged. The total number of cases is 800, half of which have been fatal. The government of Bolivia, the Pan American Sanitary Bureau and the Rockefeller Foundation organized an extensive vaccination campaign. The vaccines were sent by the government of Brazil. In the Argentine regions near Bolivia, vaccination has been extensively practiced and the Stegomyia index of the cities is being carefully observed.

Suppression of Internship

In Argentina basic teaching was given in the Faculty of Medicine for three years and clinical training was acquired during daily visits for four years to services in the numerous hospitals of the city of Buenos Aires. During the last century and the first 25 years of this century the principal basis of professional medical training was the internship. Medical students became interns in the last two years of their career and attended hospital services, changing every three or nine months. They were under the direction of the ward chief and his "chef de clinique." The interns prepared the clinical history of each case, helped in surgical interventions, visited the patients in the evening and assisted emergency cases in and out of the hospital. They had a salary and lived permanently in the hospital.

This system was becoming less efficient for several reasons: 1. A great number of capable and specialized physicians began to occupy positions of responsibility in the wards and therefore the responsibility of the undergraduates decreased. 2. Examinations in the medical school which took place only once a year became much more frequent (almost monthly in the last two years of the career); the students had to attend daily lectures and therefore they had to discontinue their hospital training. 3. For various reasons discipline became gradually less strict, and the admission of students in hospitals sometimes was made on a racial basis or in accordance with political affiliations.

Because of this, the "Sociedad de Beneficencia" hospitals discontinued internship many years ago, and soon thereafter municipal hospitals did the same, after a disturbance in one of them in which a student was killed. Only in the "Hospital de Clinicas" (Hospital of Clinics of the Faculty of Medicine) is internship still continued, but these positions are granted only to 10 or 12 of the best students in each course. Internship continues also in some private institutions, such as the Spanish, Italian and French hospitals. On the request of a great number of students and in accordance with the favorable opinion of many professors, internship was reestablished in the Durand hospital, but it was discontinued again last February because it was not successful.

International Congress of Surgery

The annual congress of the International College of Surgeons will be held in Buenos Aires early in August 1950. The government will supply funds for the congress. Almost 700 surgeons

from all American countries have been invited, and it is reported that about 90 surgeons from the United States will arrive in two Panamerican World Airways planes.

Visitors

Professor Clarence Crafoord, the eminent Swedish surgeon, has come to Argentina on invitation from the Ministry of Public Health of the Buenos Aires Province to work on cardiovascular surgery. He came with an anesthetist, a cardiologist who has specialized in angiocardiography and heart catheterization and a specially trained nurse. A special surgical service was installed in the Institute of Phthisiology of La Plata (Province of Buenos Aires), where professor Crafoord demonstrated his technics and delivered lectures. He then came to Buenos Aires by invitation of the National Ministry of Public Health. He operated and gave lectures in the "Hospital Nacional Central," where the chair of thoracic surgery of the Faculty of Medicine is located.

Death of Dr. Fitte

Dr. Marcelo Fitte died recently in Buenos Aires. He was an orthopedist and had established a foundation for research in poliomyelitis.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Various locations, June 19-21. Final date for accepting applications is May 19. *Part III.* Twenty-nine centers, June 6-29. Registration closes on May 6. Exec. Sec., Mr. R. S. Elwood, 225 S. 15th Street, Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations, July 21. *Oral.* Chicago, Oct. 8-11. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* San Francisco, June 21-23. The oral examinations in the subspecialties will be held at the same time and places. *Written.* Oct. 16. Final date for acceptance of applications is May 1. Asst. Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 3. Applications no longer accepted. Chicago, Oct. 1950. Final date for filing applications is April 30. Sec., Dr. W. J. German, 789 Howard Ave., New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC. *Oral Part II.* Atlantic City, May 21-27. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part I.* Denver, May 5-6. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various Centers, January 1951. Final date for filing applications is July 1, 1950. *Practical.* Boston, May 22-26; Chicago, Oct. 2-6; West Coast, Jan. 1951. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* San Francisco, May. Chicago, October. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: Cincinnati, May 5-7; San Francisco, June 30-July 2. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Oral and Written.* Boston, Aug. 26-27. Final date for filing applications is April 1. Sec., Dr. Robert L. Bennett, 30 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: *Oral.* May-June. Sec., Dr. Louis T. Byars, 4647 Pershing Avenue, St. Louis, Mo.

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH: *Written.* Portland, Ore., May 28. *Oral.* Portland, Ore., May 29. Sec., Dr. E. L. Stebbins, 615 N. Wolfe St., Baltimore 5, Md.

AMERICAN BOARD OF PROCTOLOGY: *Part I.* San Francisco, Dallas, Minneapolis and Philadelphia, May 13. Sec.-Gen., Dr. Louis A. Buie, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, June 23-24. Applications no longer accepted. Next examination, December 1950. Final date for filing applications is Sept. 1.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, week of June 18. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various centers, Oct. 23. Final date for filing applications is July 1. Sec., Dr. J. Stewart Rodman, 225 South 15th Street, Philadelphia.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 10-14, 1951. Final date for filing applications is Sept. 1, 1950. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 21.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

ARKANSAS: * *Examination.* Little Rock, June 8-9. Sec., Dr. Joe Verser, Harrisburg. Homeopathic. Little Rock, June and November. Sec., Dr. Carl S. Bungart, 105 N. 14th St., Fort Smith. *Eclectic.* Little Rock, June 8-9. Sec., Dr. Clarence H. Young, 1415 Main Street, Little Rock.

CALIFORNIA: *Examination, Written.* San Francisco, June 19-22; Los Angeles, Aug. 21-24; Sacramento, Oct. 16-19. *Examination, Oral and Clinical for Foreign Medical School Graduates.* San Francisco, June 18; Los Angeles, Aug. 20; San Francisco, Nov. 12. *Reciprocity, Oral Examination.* San Francisco, June 17; Los Angeles, Aug. 19; San Francisco, Nov. 11. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

CONNECTICUT: * *Examination.* Hartford, July 11-12. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic.* Derby, July 11-12. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: *Examination.* Dover, July 11-13. *Reciprocity.* Dover, July 20. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Examination.* Washington, May 8-9. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington 1.

FLORIDA: * Jacksonville, June 25-27. Sec. Dr. Frank D. Gray, 12 N. Rosalind Avenue, Orlando.

GEORGIA: *Examination.* Atlanta and Augusta, June. *Endorsement.* Atlanta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

HAWAII: *Examination.* Honolulu, July 10-13. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

IDAHO: Boise, July 10. Sec., Mr. Armand L. Bird, 305 Sun Bldg., Boise.

INDIANA: *Examination.* Indianapolis, June. Sec., Dr. Paul B. Tindall, 1138 K. of P. Bldg., Indianapolis.

IOWA: * *Examination.* Iowa City, June 12-14. Sec., Dr. M. A. Reyal, 506 Fleming Building, Des Moines 19.

KANSAS: Kansas City, June 7-8. Sec., Dr. J. F. Hassig, 905 N. 7th Street, Kansas City.

KENTUCKY: *Examination.* Louisville, June 14-16. Sec., Dr. Bruce Underwood, 620 S. 3rd Street, Louisville 2.

MAINE: *Examination and Reciprocity.* Augusta, July 11-12. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, June 20-23. Sec. Dr. Lewis P. Gundry, 1215 Cathedral Street, Baltimore 1. *Homeopathic.* Baltimore, June 20-21. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, July 11-14. Sec., Dr. George L. Schadt, Room 37, State House, Boston 33.

MISSOURI: Examination. St. Louis, May 31-June 2 and June 7-9. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Building, St. Louis.

NEBRASKA: * *Examination.* Omaha, June 5-7. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Building, Lincoln 9.

NEVADA: Carson City, May 1. Sec., Dr. George H. Ross, 112 Curry Street, Carson City.

NEW HAMPSHIRE: Concord, Sept. 13. Sec., Dr. John Samuel Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 20-23 Sec., Dr. E. S. Hallinger, 28 West State Street, Trenton.

NEW YORK: *Examination.* Albany, Buffalo, New York and Syracuse, June 27-30. Sec., Dr. Jacob L. Lochner, Jr., 23 S. Pearl St., Albany.

NORTH CAROLINA: *Endorsement.* Asheville, May 1. *Written.* Raleigh, June 19-22. *Endorsement.* Raleigh, June 19. Sec., Dr. Ivan Procter, 226 Hillsboro Street, Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, July 5-7. *Reciprocity.* Grand Forks, July 8. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, June 14-17. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

OKLAHOMA: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

SOUTH CAROLINA: *Examination.* Columbia, June 26-29. *Reciprocity.* First Monday of each month. Sec., Dr. N. B. Heyward, 1329 Blanding Street, Columbia.

SOUTH DAKOTA: * Sioux Falls, July 18-19. Sec., Dr. C. E. Sherwood, 300 First National Bank Bldg., Sioux Falls.

TEXAS: * *Examination.* Austin, June 19-21. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination.* Salt Lake City, June. Dir., Dr. Frank E. Lees, 324 State Capitol Building, Salt Lake City.

VIRGINIA: *Examination.* Richmond, June 23-24. *Endorsement.* Buchanan, June 22. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

WISCONSIN: * Milwaukee, July 11-13. Sec., Dr. C. A. Dawson, River Falls.

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Bureau of Medical Economic Research

MEDICAL ECONOMIC REVIEWS AND ABSTRACTS

Prepared by the Staff of the Bureau of Medical Economic Research

Compulsory Medical Care and the Welfare State. By Melchior Palyi. National Institute of Professional Services, Chicago, 1950.

In a prefatory note, the author states his purpose: the study of nationalized medicine as an aspect of the Welfare State. As an internationally recognized educator and economist who lived in Europe for 40 years, Dr. Palyi—now an American citizen—is singularly fitted for his study. He has taught at leading German and American universities. He was both a student and assistant of Lujo Brentano and Max Weber, two leading social scientists of the Bismarck age. He served as chief economist to the Deutsch Bank in Berlin and as scientific advisor to the Reichsbank of Germany. Thus, he is particularly familiar with the Welfare State as developed in Germany. His firsthand knowledge makes his book a valuable contribution to the literature on this subject.

HISTORICAL BACKGROUND

The idea of the Welfare State penetrated the Greco-Latin city states, the medieval city, and the post-Renaissance absolute monarchy. Dr. Palyi notes that in all welfare states the institution of benefit programs was the chief means of making people dependent on their rulers and wherever such programs existed there was constant struggle, often warfare, to seize the power that was dispensing the benefits.

The concept of the Welfare State was well entrenched in the benevolent despotism that preceded Bismarck. Bismarck, however, gave the Welfare State a quasidemocratic twist. Dr. Palyi sees his "middle-of-the-road socialism" as the connecting link between the old autocrats and the coming totalitarians. He notes the similarity between Bismarck's desire to overcome Marxism by his own brand of state socialism and the present attempt of the Fabians, the Keynesians and the New Dealers to avert totalitarianism with their middle-of-the-road statism. In actuality, however, the Iron Chancellor's Welfare State was a military monarchy capitalizing on the popular appeal of share-the-wealth schemes. The author quotes from the Bismarck biography of Erich Eyck: "To his mind the State, by aiding the workers, should not only fulfill the duty ordered by religion, but it should obtain in particular a claim on their thankfulness, a gratitude that was to be shown by loyalty to the government and by loyal pro-government votes in elections" (page 22). As a major device for obtaining this loyalty, Bismarck instituted a compulsory sickness scheme in Germany on Jan. 1, 1884.

Bismarck's paternalistic approach spread to other countries. Shortly before or during World War I, Britain, Norway, Iceland, Russia and other countries introduced modified reproductions of the German compulsory medical scheme. These were followed by more countries after 1918. New impetus was given to the spread of the movement by the great depression. At this time France finally capitulated with its own version of the German system. Both in Germany and France the compulsory medical schemes were established without the consent and often against the very vocal resistance of those who were supposed to benefit. Lenin's scheme, introduced in Russia in 1917, was the first complete cradle-to-grave plan, the first plan embodying the complete nationalization of medicine.

Once a nation has started down the road of welfarism, anyone who can promise greater benefits and security has every chance of success. Thus the already deep-rooted welfare concept in Germany paved the way for the ultranationalism and superwelfarism of Hitler. Dr. Palyi points out the emphasis on health in the Nazi program of racial nationalism. He quotes a committee report on health insurance of the Canadian House of Commons (March 16, 1943) as follows: "During the early years of Hitler's regime, the government's medical program was looked upon by many observers as one of the greatest props of the totalitarian state" (page 24).

The most crucial period since the age of Bismarck in the Western history of compulsory health insurance was 1943-1946. The chaos of the hour of liberation from Nazi occupation precipitated much hurried legislation and far reaching reforms. Communists had a decisive influence in public affairs. In 1944, France passed a new social security law. In the same year Belgium also introduced a sickness scheme. Under abnormal wartime and postwar conditions either new sickness plans were instituted or the old ones revamped in Italy, Holland, Australia, Argentina, Brazil, Chile, Spain, the Russian satellite countries, Costa Rica, Ecuador and Britain. Legislation was passed but not yet put into effect in three Canadian provinces and in Sweden.

CONTEMPORARY SCHEMES

Dr. Palyi shows that most of the present plans are styled either after the Bismarckian or Leninian schemes; the Lenin type, however, seems destined to become the more popular. In the German scheme the beneficiaries were "insured." At the outset, they were classified according to risk and received benefits in proportion to their contributions. Coverage was restricted to employees and their families and benefits were received in cash. The scheme did not intend to free the individual of all responsibility. The Russian scheme made no pretences of insurance or business-like management. It attempted to cover everyone and provide benefits according to need and unrelated to any contributions. (Actually since Stalin, this scheme has been considerably modified.) In reality, the difference between the two types of plans is only one of degree. As soon as cash benefits are reduced and benefits in kind substituted, the scheme becomes a means of redistributing wealth and any resemblance to insurance is gradually eliminated. The German system today is still the nearest to the Bismarckian setup. The contemporary French and British schemes embody the Lenin type of security.

Rising Costs.—Whether the plan is drawn up as governmentalized insurance based on payroll taxes levied on employers and employees (German plan) or as an over-all security scheme carried by the general taxpayer (Russian plan), or a compromise form, skyrocketing costs seem to be a curse that cannot be avoided unless the functions of the scheme are so curbed as to make it completely ineffective. In Britain, the total cost of Bevan's scheme, which started on July 5, 1948, was set at $800,000,000 for the first nine months of operation. By February 1949, this amount had to be raised to over $1,100,000,000, well over $30 per capita of beneficiaries. The budgeted cost of the new health plan for 1949-1950 is $1,410,000,000, just about 25 per cent more than what had been estimated nine months earlier. An earlier scheme in Great Britain, which was introduced by Lloyd George in 1911, kept the cost down somewhat by its many attempts to utilize insurance principles. Yet the per capita costs of the service doubled in the six years between 1922 and 1927, a period of virtually stable prices.

In France, under the old panel system the tax on payrolls was 2.80 per cent in 1938. In 1946, the new government medical scheme was instituted with a payroll tax of 4.80 per cent. This tax was increased to 5.44 per cent in 1947 and 6.16 per cent in 1948. Despite the increasing taxes, the plan was faced with a deficit in 1948. The seventyfold rise in the total costs of the French health scheme from 1935 to the end of 1948 cannot be explained by a thirtyfold inflation in retail prices and a thirty-five fold inflation in a wholesale price index, not even if the extension of coverage to about 20 per cent more persons is considered.

German compulsory medicine started with a payroll tax of 4.5 per cent. The present tax is 7 to 7.5 per cent. The total per capita medical expenditures increased from 10.22 marks ($2.50) 45 years ago to 27.62 marks ($6.60) in 1913 and 72.43 marks (almost $18.00) in 1930. The general price level increased only 50 per cent during this period.

Dr. Palyi notes also the rising costs of bureaucratic administration and political corruption. Administrative costs of compulsory health schemes account for as much as four fifths to five sixths of the respective countries' total social security administrative costs. Within the health schemes, administration costs generally absorb about 8 per cent of total outlay.

Wherever compulsory government medical plans are present, the incidence of illness shows a decided increase. In France in 1948, people went to the doctor 3 times more often per insured than they did under the previous more limited panel system. A table on sickness statistics of German obligatory panels shows that the number of paid sickness days per 100 members increased from 685.2 in 1885-1913 to 1,329.8 in 1928. Although this upward trend in absenteeism was reversed for a while by Brüning's reforms, the number of paid sickness days per 100 members rose again from 926.9 in 1933 to 939.7 in 1938.

To meet the rising total costs of the health schemes, their coverage is almost invariably expanded. The hope of added revenue from new contributors, perhaps from those in higher income brackets, however, results in financial disappointment. When family members and members with higher incomes enter the schemes they generally bring more than proportionate demands. Because the plans always fail to provide what they promise, a motive or excuse for increasing the amount of benefits and number of services arises. This brings added costs which must be met with added taxes or poorer service. It is a vicious cycle with no turning back. To go back, says Dr. Palyi, "would be risking political suicide. Semi-dictatorial regimes, caught in a depression, like Brüning's in Germany (1930-1931) and Schuschnigg's in Austria (1937) tried it. That helped to seal their fates. Only a military ruler like Pilsudski in Poland (1933) and, of course, Stalin (1938) can afford such experimentation" (page 71).

Deteriorating Medical Services.—What happens to the doctors, the key figures in any medical system, under a nationalized health plan? One way to curtail the rising costs of government medical schemes is to reduce the doctor's fees. The doctor is then forced to compensate for his loss of income. If he is paid under a fee-for-service arrangement, there is a tendency for him to increase his number of performances. If he receives a fixed amount for each patient, the tendency is to increase the the number of patients on his panel. In any case, the patient load becomes too great to administer anything but superficial and mechanical medical attention. On the patient's side, there is a strong temptation to harass the doctor with minor or imaginary ailments. ". . . half-pay with no work has a temporary preference, in the individual's schedule of desirable things, over uninterrupted work at full pay. . . ." (page 99). The very considerable rise in the number of absences from factory and office work under the compulsory schemes attests this fact. The real problem, Dr. Palyi demonstrates, does not lie in the deliberate malingering of some patients but in something he calls the "subjective risk." "To be sick is, to an undefinable but very substantial extent, a matter of 'psychology'" (page 95). Sickness often comes at a time when it is very convenient to stay at home. Dr. Palyi quotes Sir William Beveridge himself as warning that "the danger of providing benefits which are both adequate and indefinite in duration is that men, as creatures that adapt themselves to circumstances, may settle down to them" (page 95). When there is a free market, the price mechanism tends to eliminate abuses or, at least, to keep them within bounds. Under compulsory systems, the doctor could control such abuses by refusing to give his signature to a declaration of the patient's illness. Most of the doctors, however, engaged in a constant scramble for more patients, cannot afford the unpopularity which would result from such action. Thus, there is an unintentional collaboration between patients and doctors which fosters abuse and malingering and results in overcrowded offices, long waiting by patients and perfunctory medical service. Attempts at control are unsuccessful. In some countries, medical expenses are paid for by government funds only after the patient has already directly paid a small initial cost. But to be politically expedient, such deductibles have to be too small to accomplish their purpose. Once the charge is paid, there is no further restraint on the patient. In fact, there is often an attempt by the patient to retrieve the initial cost by prolonging his recovery. In some schemes supervisory doctors are employed to control the practicing doctors. In the end, most schemes resort to some form of policing. Bureaucratic controls over the personnel of the service and its beneficiaries become increasingly necessary. The fundamental physician-patient relation is uprooted. Medical secrecy ceases. Confidence in a physician, whose judgment may be reversed by bureaucrat officials, is lost. Objective standards of sickness and treatment are applied to a highly individual and subjective matter. Poor medicine at a high cost results.

Why then is government medical care so appealing? Dr. Palyi answers that there is a deep psychologic reason: "the longing in the heart of the masses, on which the politician can capitalize, for protection against the hazards of life, cost what the protection may" (page 134). Until the turn of the century, the appeal to humanitarianism was the principal argument for compulsory medical care: To leave those who cannot afford medical care to charity is humiliating. Government health insurance will offer these people protection as a matter of right. After World War I, the Bismarckian argument became popular: people need to be compelled to purchase medical care, because otherwise they do not provide for it themselves. Dr. Palyi notes that the most effective argument for compulsory medicine still is "to provide for people in the low income brackets who cannot provide for themselves. But in practice, and from the outset, the schemes always include a majority that could very well take care of themselves. And almost always they leave out a minority, especially the lowest income group, that still has to fall back on poor relief or private charity" (page 135).

Since World War II a new ideology has been added to the humanitarian and paternalistic arguments. The professed goal today is "to provide security for all, and to do so in such a fashion as to equalize the hazards of life between rich and poor, between high-salaried and low-paid, between skilled and unskilled, etc." (page 135). Dr. Palyi believes this ideology of equalitarian security is expressed in communist and socialist strength. He believes it is clearly stated by the leading French representative, Monsieur Laroque: "the French social security plan was aimed in essence at no other target than to introduce a little more justice into the distribution of the national income" (page 138). But, Dr. Palyi notes, assuming that the income pattern does need correction, can anything as costly as compulsory health schemes contribute to that goal? The costs of these schemes, if shifted onto business, must be added to the price of the products which these people buy. "*As a class*, the beneficiaries receive at best with the left hand what they lose with the right" (page 139). The costs may even be high enough to discourage production and result in a smaller total income to be shared.

Another popular argument is that of "historical necessity": Compulsory health insurance is a necessity in industrial society. Labor, the most valuable natural resource, must be protected against "depreciation and obsolescence." Wherever a society becomes industrialized, compulsory medical care inevitably follows. Dr. Palyi, however, notes that compulsory medical care was introduced into Bismarck's Germany when that country was only on the threshold of industrialization; while it was not introduced into highly industrialized England until a generation later. Backward and rural Rumania had a nationalized system some 30 years earlier than progressive, industrialized Belgium. The facts do not support the argument of historical necessity.

The idea that it is to a nation's advantage to maintain the productivity of labor by protecting its health is economically sound. Similarly, it is ethically axiomatic that the poor and helplessly sick must be cared for. Says the author, "As a matter of fact, if the 'statesmen' have been able to make capital of medical care, it is because they could and can appeal to incontestable social reasons and sentiments. But that is not the problem. The problem is whether the sound and desirable objectives on which we all agree could or could not be pursued but by the one and only way of salvation, as the opportunistic politician claims: by recourse to governmentalized compulsion and to massive subsidies" (page 144). Dr. Palyi believes that insurance against the occurrence of illness is a desirable objective but that it can be more effectively accomplished under a free voluntary system, where competition and the price system would work to prevent exorbitant costs, political corruption and waste. "Even so," he notes, "the fundamental fact remains that no country can provide more in sickness care than its economic production permits. Ultimately, the status

of health care depends on the level of wealth, not on schemes of one kind or another" (page 145).

Throughout his book, Dr. Palyi's thesis is clear: National compulsory medical schemes are the entering wedge and the very core of the Welfare State. Nowhere have compulsory schemes been successful in providing medical care or in reducing the financial burden of illness. They have been successful, however, in augmenting and strengthening the control of a nation by those who administer the scheme. In democracies the Welfare State, under the pretense of benevolence, humanitarianism and equality, is merely a stepping stone to the police state. The pathway from one to the other is clearly revealed in the history of the Welfare State in various nations and in contemporary welfare state programs.

Perhaps the most important single point Dr. Palyi brings forth is this: Compulsory medical care is fundamentally different from virtually every other branch of social security. With minor exceptions only, all other branches of that system provide benefits in cash. Compulsory medical care is the only one which, as it developed, placed the major emphasis upon benefits in kind—personal services and materials—rather than in cash. "Consequently," he states, "subjective judgment enters into the administrative picture at almost every step, opening the door to arbitrary decisions and to bureaucratic red tape and encroachments, to say nothing of conscious and greedy manipulations. A quest for elaborate and costly management and controls arises, of a complexity and an intricacy with no parallel in any other field of social security, pouring its own fuel on the fire of financial troubles" (page 53).

Throughout the book he unfolds his thesis clearly and concisely. The conciseness of his presentation does not favor a discussion of certain related subjects. He does not examine certain sociologic changes of the last half-century which have encouraged the continued growth and acceptance of security plans. In particular, he does not mention the aging population which is the result of the unprecedented health progress of the past 50 years. Older people, more threatened by sickness and financial insecurity, are likely to favor cradle-to-grave schemes. Their increased numbers enable them to have a more decisive influence on legislation. An adequate discussion of this problem, however, would require another book. Dr. Palyi effectively and convincingly accomplishes the task he has set for himself. He provides an authentic historical record of compulsory medical care programs and their major economic, political and social implications and resultants.

Medical Motion Pictures

FILM REVIEWS

The Ears and Hearing. 16 mm., black and white, sound, showing time nine minutes. Prepared in collaboration with Heinrich F. Kobrak, M.D., John B. Lindsay, M.D., and Henry B. Perlman, M.D., Department of Otolaryngology, University of Chicago, Chicago. Produced in 1949 by and procurable on rental or purchase from Encyclopaedia Britannica Films, Inc., 1150 Wilmette Avenue, Wilmette, Ill.

This motion picture is divided roughly into three parts, the first of which shows the importance of hearing in normal life; the second explains, with the help of diagrams, the action of the auditory ossicles and of the cochlea; the third suggests the value of hearing aids for the deaf.

It is essentially a brief presentation that can not go deeply into any of these three aspects and would therefore be of greatest value as an introduction to the subject for students in eighth grade and high school classes in physiology. It would be excellent for this purpose, inasmuch as the diagrams beautifully show the supposed mode of action of the ear drum and ossicles and because the scene showing the user of a hearing aid will help to overcome the existing, widespread and altogether unfortunate unwillingness of many persons with impaired hearing to accept hearing aids. The photography, animation and narration are excellent.

Girls in White. 16 mm., black and white, sound, showing time fourteen minutes. Produced in 1949 by RKO Radio Pictures, Inc., New York. Procurable on loan to member hospitals from the American Hospital Association, 18 East Division Street, Chicago 10, or from RKO Radio Pictures, Inc., 16 mm., Educational Division, 1270 Avenue of the Americas, New York 20, who will refer the request to an organization in the area in which the request originates.

This motion picture is a dramatic appeal to call to the attention of young girls the value of nursing as a career. It depicts the necessary qualifications for a nurse and portrays the basic training, clinical work and surgery essential in nursing education. Various branches of nursing such as public health, the Armed Forces and general hospital work are presented.

This is highly recommended for nurse recruitment programs and vocational training courses. It will also be of interest to women's clubs and civic organizations. The photography, narration and direction are excellent.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Chiropractors: Use of Title "Physician."—The defendant was convicted of a violation of the California chiropractic act so he appealed to the appellate department, superior court, San Diego County, California.

The defendant, a licensed chiropractor, held himself out to the public by business cards and a sign on his office window as a "chiropractic physician." The jury in the trial court was instructed, in effect, that if it found that the defendant used the word "physician" it must find him guilty. The chiropractic act provides in part: "Any person . . . who uses . . . the term 'physician' . . . the use of which would indicate that he or she was practicing a profession for which he held no license from the state of California . . . shall be guilty of a misdemeanor. . . ." The defendant contended that his use of the term "chiropractic physician" was not deceptive of his status as a licensed chiropractor.

In 1922, said the court, the present chiropractic act, an initiative measure, and the present osteopathic act, also an initiative measure, were submitted to the voters and approved. At that time the medical practice act of 1913 was in effect which authorized to be issued; (1) a physician's and surgeon's certificate authorizing the use of drugs and medicines and (2) a drugless practitioner's certificate. Whoever framed the chiropractic act for submission to the people, the court continued, obviously had in mind the existing provisions of the medical practice act which made ineligible for a physician's and surgeon's certificate those practitioners of the healing art licensed to practice without drugs. In a prior Supreme Court case, it was held that one licensed under the osteopathic law was not entitled to the benefits and prerogatives of the title "physician" on the theory that a "physician" practiced with drugs and an osteopath was a drugless practitioner. By the same token and by the same process of interpretation, the appellate department concluded, a chiropractor under the existing chiropractic law is specifically denied the right to employ the word "physician" since he professes to heal without drugs or medicines. We are not impressed, the court further said, with the argument that the defendant has saved himself from violation of the act by adding the word "chiropractic" to the word "physician." There can be no use of the word "physician" by a practitioner of the healing arts except to color and imply a license to practice with drugs. The distinction made by the act between the two types of practitioners, those who use drugs and those who do not, has been held to be a reasonable classification. Therefore, in view of the meaning which attaches to the statute in consideration of its express terms and the aim and nature of the class of legislation to which the act belongs, we would construe the statute as did the court below and find no error in the instruction given the jury at the trial. Accordingly the defendant's conviction for use of the word "physician" in his advertising was affirmed.—*People v. Christie, 212 P. (2d) 629 (Calif., 1949).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in Continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodical are available from 1939 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

79:1-204 (Jan.) 1950

Physiologic Background of Fetal Anoxia at Birth and Cyanosis in Newborn. C. A. Smith.—p. 1.

Protamine Tetanus Toxoid. V. Ross, F. L. Clapp and C. H. Parsons. —p. 10.

Deficient Development of Masculinity: Psychosomatic Problem of Adolescence. W. A. Schonfeld.—p. 17.

*Excisional Surgical Treatment of Pulmonary Tuberculosis in Children. M. Levitin and M. Zelman.—p. 30.

*Use of Visammin in Treatment of Whooping Cough. A. Khalil and A. Safwat.—p. 42.

Duodenal Ulcers in Infants. J. H. Fisher.—p. 50.

Hyaluronidase in Administration of Fluids. A. A. Jaworski and J. E. Farley Jr.—p. 59.

Cystic Change in Pancreas: Its Experimental Production. P. V. Végheyi, T. Keményand J. Sós.—p. 65.

Carpal and Epiphysial Development: Another Index of Nutritional Status of Rural School Children. O. D. Abbott, R. O. Townsend, R. B. French and C. F. Ahmann.—p. 89.

Bronchopulmonary Complexes in Children. R. H. Kunstadter, A. Miller and F. Whitcomb.—p. 82.

Fibrosis of Pancreas: Enterogastrone and "Duodenal Mechanism" in Relation to Increased Appetite. C. U. Lowe, C. D. May, H. M. Stauffer and E. D. B. Neuhauser.—p. 91.

Cerebral Palsy: Selection and Training of Child with Normal Mentality. S. Keats.—p. 124.

Excisional Surgical Treatment of Pulmonary Tuberculosis in Children.—Levitin and Zelman report on 4 children, from 2½ to 12 years of age, in whom pneumonectomy was performed for pulmonary tuberculosis. Three are asymptomatic. Repeated gastric washings after the operation revealed no acid-fast bacilli. One died as a result of the progression of the tuberculous process. The factors responsible for the failure of the treatment were an exudative lesion in the contralateral lung, omission of streptomycin, and the fact that the patient, a Negro girl 12 years of age, was in the adolescent period, an age favorable to spread of tuberculosis. She lived more than two and a half years after the operative intervention. It is questionable whether this survival would have been possible with other therapy. The indication for surgical treatment in *2* patients was "destroyed lungs," while in the other *2* patients it was cavities of the basal lobe. The first *2* cases would also fit the classification of desperate risk, since no other form of therapy was available. It is generally held that in adults pulmonary resection should not compete with the common collapse measures but should be held in reserve for use should such measures fail. In children the problem is different; thoracoplasty, so often used in adults, is definitely contraindicated because of the resulting extreme deformity. As to the future activity of children with only one lung, the authors say that experiments in growing animals revealed that a true hyperplasia of the remaining lung takes place. In children in whom the lungs have been removed for conditions other than tuberculosis, similar changes have been observed, with the healthy lung subsequently filling the entire thoracic cavity. The functional prognosis is much better when lobectomy is done than when the entire lung is removed. Lobectomies performed in children for bronchiectasis have given excellent functional results.

Visammin in Whooping Cough.—Khalil and Safwat used visammin (also known as khellin) in the treatment of children with whooping cough. This drug is an effective vasodilator and an antispasmodic aid in bronchial asthma. A considerable number of pharmaceutic preparations containing visammin are available commercially. In the work described here, the liquid extract of Ammi visnaga, sold under the name of ammicardine®, was used. Although in adults visammin is generally given by intramuscular injection, in children the authors prefer the oral administration. Each child was kept under constant supervision and a record was kept of the number and severity of paroxysms. Graphs record the results of the treatment with visammin in *22* patients with whooping cough. The authors conclude that this drug is valuable in the symptomatic treatment of whooping cough. It is not dangerous and has no undesirable side effects, even in small children. The number of paroxysms and their intensity and duration are rapidly reduced by visammin. In consequence, the general condition of the patient, especially as regards sleep and appetite, improves. Visammin should be administered orally in doses of 5 to 7 mg. per kilogram of body weight per day, this dose to be divided into three or four administrations per day and continued throughout the paroxysmal stage of the disease. It is advisable to administer visammin in a syrup to mask its bitter taste.

American Journal of Medicine, New York

7:699-848 (Dec.) 1949

Radioiodotherapeusis. R. H. Williams, B. T. Towery, H. Jaffe and others.—p. 702.

Factors Influencing Effectiveness of Radioiodotherapeusis. R. H. Williams, H. Jaffe, B. T. Towery and others.—p. 718.

*Radioactive Iodine, I-131, in Treatment of Hyperthyroidism. S. C. Werner, E. H. Quimby and C. Schmidt.—p. 731.

*Effect of Adrenocorticotrophic Hormone (ACTH) on Rheumatoid Arthritis. C. Ragan, A. W. Gerkenet and R. H. Boots.—p. 741.

Technics for Recording Ballistocardiogram Directly from Body. W. Dock and F. Taubman.—p. 751.

Effects of Clockwise Rotation of Heart on Electrocardiogram. E. Goldberger.—p. 756.

Electrocardiographic Evaluation of Boeck's Sarcoid and Advanced Pulmonary Tuberculosis; Special Reference to Interpretation of Multiple Unipolar Leads. S. R. First.—p. 760.

*Hemiplegia Attending Acute Myocardial Infarction. W. B. Bean, G. W. Flamm and A. Sapadin.—p. 765.

Radioactive Iodine in Treatment of Hyperthyroidism.—Radioactive iodine, I^{131}, (eight day half-life) as an agent in the treatment of toxic goiter was studied by Werner and his associates at the Presbyterian Hospital of New York for the past three years. Observations in 103 patients indicated that about 50 to 100 microcuries of I^{131} retained per estimated gram of thyroid tissue resulted in satisfactory remission in a high percentage of cases. Since the average retention of I^{131} after ingestion is about 50 per cent of the administered amount, the administration of approximately 100 to 200 microcuries per estimated gram of gland weight would approach the desired goal. A total dosage of about 3 to 15 millicuries would thus be required. For fear of inducing a high incidence of hypothyroidism, they decided to limit the highest dosage to 6.5 millicuries and to retain the low limit at 3 millicuries. I^{131} is diluted in water for ingestion. The container is carefully rinsed and the washings also swallowed. Twenty-four hours after ingestion of the I^{131} the uptake by the thyroid is measured, because at this point uptake is usually maximal. Uptake is determined by direct measurement over the thyroid gland with the Geiger counter. Apparently vascularity and distribution of colloid play an important role in the responsiveness to internal radiation. The over-all result after such therapy is gland shrinkage and subsequent fibrosis. About 92 per cent of all the patients were relieved of hyperthyroidism. Radioiodine should not be used in primary, previously operated on goiter and should be restricted in general to the older age groups. Treatment with I^{131} is the method of choice for hyperthyroidism that has reappeared after operation. Administration of sodium iodide or strong iodine solution or of an organic iodine compound during intravenous pyelography or in the form of a gallbladder dye will block isotope uptake. In general, two weeks without stable iodine after brief periods of such therapy, or four weeks following more prolonged administration, will suffice to permit I^{131} to be given successfully. Similarly, preceding antithyroid drug administration will block I^{131} uptake. This effect may wear off in one to four days, but a lapse of several months may be necessary before uptake again becomes sufficient to permit treatment with the isotope.

Effect of Pituitary Adrenocorticotropic Hormone (ACTH) on Rheumatoid Arthritis.—Ragan and his associates report on 8 patients with rheumatoid arthritis treated with pituitary adrenocorticotropic hormone (ACTH). All received

the hormone intramuscularly in divided doses every six hours. In most of the patients the average daily dose was 40 mg. There was a prompt remission of the symptoms of rheumatoid arthritis. After the cessation of therapy, relapse occurred in 7 of the 8 patients. The protein changes described by Hench could be confirmed in these patients; they were evident in the serum globulin content, erythrocyte sedimentation, cephalin flocculation and trypsin inhibitor levels. Agglutination of group A hemolytic streptococci and sensitized sheep cell agglutination showed only minor changes as the result of treatment. It seems probable, but has not been definitely established, that the favorable response of the patient with rheumatoid arthritis to the administration of ACTH is due to the production of hyperadrenalism and a consequent suppression of the activity of mesenchymal tissue.

Hemiplegia Attending Acute Myocardial Infarction.—Bean and his associates say that it is usually taken for granted that hemiplegia occurring at the time of acute myocardial infarction or shortly after is embolic in origin, the embolus coming from a ventricular mural thrombus. In a survey of a large series of cases of myocardial infarction proved at autopsy, it was noted that the majority of cases of hemiplegia which followed infarction of the heart were associated with cerebral arteriosclerosis and local thrombosis or even hemorrhage rather than with emboli. The authors made electrocardiograms in many patients with hemiplegia. In several patients the medical history revealed that hemiplegia had ensued shortly after cardiac infarction. The protocols of all autopsies done in the department of pathology of the University of Cincinnati and the Cincinnati General Hospital for the years 1941 through 1946 were investigated for cases in which hemiplegia was precipitated by acute myocardial infarction. The following criteria were used in selection: the presence of a gross recent infarct of the heart measuring at least 3 by 3 cm. and of focal neurologic signs suggesting cerebral hemorrhage, thrombosis or embolism, but the absence of evidence of an acute vascular lesion of the cerebral vessels. The authors present clinical and morphologic observations on 6 patients with major symptoms of acute cerebral disturbance associated with recent infarction of the heart. In all but 2 patients a myocardial infarct was suspected clinically. There was suggestive evidence that the pattern of local arterial disease in the brain determined the clinical signs and symptoms. A reduction of cardiac output following infarction of the heart may thus lead to the clinical masquerade of an acute cerebral vascular accident. If the hypodynamic state is severe enough or lasts long enough, vasoparesis, vasoparalysis and coalescing small hemorrhages may occur. The syndrome has received little attention. If it is properly identified and treated, there is some chance that one form of "stroke" will warrant a more optimistic outlook.

Archives of Internal Medicine, Chicago

85:1-198 (Jan.) 1950

Use of Lithium Salts as Substitute for Sodium Chloride. J. H. Talbott. —p. 1.
Renal Osteodystrophy Associated with Diabetes Mellitus: Congenital Polycystic Hypoplasia of Kidneys and Polycystic Disease of Pancreas. A. Jackson, G. C. Bates, M. Slavin and M. D. McFarland.—p. 11.
*Use of Paraaminobenzoic Acid in Dermatomyositis and Scleroderma: Report of 6 Cases. C. J. D. Zarafonetis, A. C. Curtis and A. E. Gulick.—p. 27.
*Antimicrobial Therapy in Typhoid. V. Knight, F. Ruiz Sánchez, A. Ruiz Sánchez and others.—p. 44.
New Sulfonamide (Gantrisin®): Studies on Solubility, Absorption and Excretion. F. A. Svec, P. S. Rhoads and J. H. Rehr.—p. 83.
*Whipple's Intestinal Lipodystrophy: Report of 4 Cases and Discussion of Possible Pathogenic Factors. J. P. Hendrix, B. Black-Schaffer, R. W. Withers and P. Handler.—p. 91.
Value of Southey-Leech Tubes in Rapid Relief of Massive Edema. M. J. Fiese and J. M. Thayer.—p. 132.
Studies on Bone Marrow in Hyperglobulinemia. I. Berlin, S. L. Wallace and L. M. Meyer.—p. 144.
Infectious Diseases: Fifteenth Annual Review of Significant Publications. H. A. Reimann.—p. 156.

Paraaminobenzoic Acid in Dermatomyositis and Scleroderma.—Zarafonetis and his associates describe observations on 6 patients whom they treated with paraaminobenzoic acid. Two patients with dermatomyositis, 1 of whom also had scleroderma, improved greatly during prolonged therapy with paraaminobenzoic acid. Three of 4 patients with scleroderma experienced beneficial effects from similar treatment. The patients were given 2 Gm. every two hours, 3 Gm. every three hours or 2 Gm. every three hours. The cause of dermatomyositis and scleroderma is unknown, but the concept of "diffuse collagen disease" is generally accepted as applicable to them and to lupus erythematosus. Since paraaminobenzoic acid had proved effective in lupus erythematosus, it was reasoned that it might also be beneficial in dermatomyositis and in scleroderma. This proved to be the case in the aforementioned 6 cases, but the mechanism of action of paraaminobenzoic acid in dermatomyositis and scleroderma remains obscure as it is in lupus erythematosus.

Antimicrobial Therapy of Typhoid.—The investigations described by Knight and others were carried out on patients with typhoid in the region of Guadalajara, Mexico, several Mexican and United States investigators taking part in the study. Three drugs were tried: a polymyxin B, aureomycin and chloramphenicol (chloromycetin®). The incidence of typhoid in Guadalajara is high. In the years 1943 to 1947 there was an average of 152 cases reported annually, and there is reason to believe that an even larger number escaped reporting. Because of the endemic character of the disease, it is particularly prevalent in childhood and early adult life. The development of infection after the age of 35 years is rare and was not observed during the months of the present study, when 50 patients were treated. All patients were acutely ill. The administration of polymyxin B to 4 patients resulted in no beneficial effects definitely attributable to the drug and was accompanied with serious manifestations of toxicity. Thirty-one of 34 patients who received aureomycin made uncomplicated recoveries, and the duration of total illness was reduced. The results were not uniform. All 13 patients who received chloramphenicol recovered within approximately seventy-two hours, regardless of the severity or the length of time the patient had had the infection when antimicrobial therapy was started. This superiority of chloramphenicol over aureomycin for typhoid was not observed in a concurrent study of the two drugs in the treatment of brucellosis and rickettsial infections.

Whipple's Intestinal Lipodystrophy.—Hendrix and his associates say that the rare debilitating disease first described by Whipple in 1907 is characterized clinically by gastrointestinal distress with fatty diarrhea and failure of intestinal absorption leading to death. In some respects it resembles the sprue syndrome, but macrocytic anemia is lacking. It is frequently accompanied with chronic arthritis and hypotension. Four patients with this condition were examined post mortem at Duke Hospital; the authors believe this to be the largest series seen in any clinic. One of these patients was followed at intervals throughout his illness. The diagnosis was made during life by biopsy of a mesenteric lymph node. The authors stress that the disease may be recognized post mortem by nonsudanophilic macrophagocytosis of the lamina propria of the small intestine and occasionally of the proximal portion of the colon, lipogranulomatosis of the mesenteric and draining lymph nodes and absence of significant evidence of chylous obstruction. Many patients present chronic polyserositis and marantic endocardiosis. The cause of Whipple's disease remains unknown, but a pathogenesis is suggested. It is believed that the deficient absorption of fat in Whipple's disease is due to a fault of unknown nature of the epithelium of the small intestine, which likewise impairs the absorption of glucose and perhaps of products of protein digestion as well. It is suggested that Whipple's disease is a sequel to a systemic illness or intoxication characterized by inflammation of the serous membranes. There is suggestive evidence in some cases of functional impairment of the adrenal cortex. Since the diagnosis of Whipple's disease rests on the demonstration of the characteristic changes in the mesenteric lymph nodes, biopsy is imperative in order to differentiate the disease from other spruelike states.

Cincinnati Journal of Medicine

30:651-706 (Dec.) 1949

Aspects of Sedation in Hospital. C. K. Hofling.—p. 651.
Use of Catgut, Cotton and Silk in Surgery. J. L. DeCourcy.—p. 654.
Carcinoma of Breast. P. J. Centner.—p. 659.

Diseases of Chest, Chicago

16:633-924 (Dec.) 1949

*Preliminary Report on Use of Para-Aminosalicylic Acid in Treatment of Pulmonary Tuberculosis. H. C. Sweany, G. C. Turner, M. Lichtenstein and S. Estin.—p. 633.
Effect of Streptomycin with Para-Aminosalicylic Acid on Emergence of Resistant Strains of Tubercle Bacilli. E. Dunner, W. B. Brown and J. Wallace.—p. 661.
Occurrence of Tubercle Bacilli Resistant to P-Aminosalicylic Acid (PAS). A. G. Karlson, A. Delande, D. T. Carr and others.—p. 667.
Cavernostomy and Tamponade of Pulmonary Cavities with Para-Aminosalicylic Acid. G. Maurer.—p. 676.
*Treatment of Tuberculosis in Sweden with Para-Aminosalicylic Acid (PAS): Review. J. Lehmann.—p. 684.
Selecting the Streptomycin Regimen for Patients with Pulmonary Tuberculosis with Special Reference to Intermittent Dosage Schedule. C. W. Tempel and W. E. Dye.—p. 704.
*Factors Influencing the Outcome of Streptomycin Therapy of Pulmonary Tuberculosis. W. B. Tucker.—p. 714.
Streptomycin in Treatment of Tuberculosis in Children. E. M. Jones and W. L. Howard.—p. 744.
Streptomycin Dosage in Treatment of Tuberculosis. E. Bogen.—p. 761.
Streptomycin in Treatment of Miliary and Meningeal Tuberculosis Based on Study of 30 Cases. A. Shamaskin, E. J. Des Autels, H. C. Sweany and others.—p. 765.
Treatment of Tuberculous Tracheobronchitis with Streptomycin. S. S. Cohen and Wen-Yao Yue.—p. 791.
Topical Detergent Antibiotics in Treatment of Tuberculous Sinuses. E. J. Grace and V. Bryson.—p. 795.
Use of Dihydrostreptomycin in Treatment of Tuberculosis. D. T. Carr, H. C. Hinshaw, K. H. Pfuetze and H. A. Brown.—p. 801.
Antibiotics in Non-Tuberculous Pulmonary Diseases. A. Goldman.—p. 822.
Trends in Use of Antibiotics in Thoracic Surgery. D. H. Waterman, S. E. Domm and W. K. Swann.—p. 832.
Aerosol Therapy of Bronchopulmonary Diseases. L. L. Friedman.—p. 848.
Treatment of Tuberculosis with Promizole: Clinical Investigation with Matched Controls. H. A. Burns, W. H. Feldman, H. C. Hinshaw and others.—p. 867.
Tuberculosis and Antihistaminics. T. Millner and A. Hurst.—p. 870.
Antihistamines in Treatment of Common Cold: Preliminary Report. J. W. Middleton and J. A. Rider.—p. 879.
Effects of Administration of Protein Hydrolysate (Amigen), Testosterone and Folic Acid on Nitrogen Balance in Patients with Chronic Pulmonary Tuberculosis. H. S. Newman, M. A. Rubinstein and G. Ross.—p. 885.

Paraaminosalicylic Acid in Pulmonary Tuberculosis.—Sweany and co-workers give a preliminary report on 40 patients with pulmonary tuberculosis to whom paraaminosalicylic acid, neutralized with 0.6 Gm. of sodium bicarbonate per gram of paraaminosalicylic acid, was given in a liquid preparation in a dose of 3 Gm. four times daily for 60 to 120 days. Roentgen examination, clinical effects and laboratory changes noted were fairly comparable to the results observed in streptomycin-treated patients, but were not always as clearcut and did not appear as soon as in streptomycin-treated patients. Paraaminosalicylic acid appears to be of value to patients with tension cavities. Many cavities shrank, and some became lost to view after paraaminosalicylic acid treatment. In chronic fibro-ulcerative tuberculosis there was the same erratic effect on some cavernous types with and without infiltration as were observed in similar cases of disease treated with streptomycin. The outstanding difference was that germ resistance was not of great significance in paraaminosalicylic acid therapy. A more prolonged study is mandatory in this type of case, since the drug appears to be practically harmless, produces clinical improvement and lessens cough and expectoration. Paraaminosalicylic acid may be used simultaneously or alternately with streptomycin. Paraaminosalicylic acid therapy may be combined with surgical treatment. Improvement resulted from use of this drug in 50 per cent of the cases in which streptomycin therapy failed. Paraaminosalicylic acid appears to have a definite field of usefulness in the treatment of pulmonary tuberculosis.

Paraaminosalicylic Acid in Pulmonary Tuberculosis in Sweden.—Lehmann compared the efficacy of paraaminosalicylic acid in the treatment of 205 patients with pulmonary tuberculosis in Sweden with that of streptomycin in the treatment of 223 patients by the Army, Navy and Veterans Administration in the United States. Peroral administration of paraaminosalicylic acid was used as the routine method, with an average dose of 14 Gm. daily divided into four to six doses. Treatment was continued for one to three months in 30 per cent of the cases, three to six months in 49 per cent of the cases and more than six months in 21 per cent of the cases. Ninety-nine of the 205 Swedish patients were male and 106 were female. Six patients were in the age group 5 to 15 years, 151 in the age group 15 to 35 years, and 48 in the age group 31 to 50 years. The Swedish and American clinical material was comparable with respect to age, character of the pulmonary processes and frequency of cavities. Although the duration of the treatment with streptomycin was four months, the comparison of the efficacy of the two drugs seemed justified, as, in the majority of the patients treated with streptomycin, resistance to the drug developed within three to four months of treatment and, therefore, further improvement could be expected to take place by continued treatment only in a minor number of cases. Normal temperature was attained in 75 per cent of the patients treated with paraaminosalicylic acid and in 47 per cent with streptomycin. Improvement in the erythrocyte sedimentation rate was observed in 84 per cent of the patients treated with paraaminosalicylic acid and only in 51 per cent of the patients treated with streptomycin. The gain in weight was superior in patients treated with streptomycin, 84 per cent compared with 62 per cent for paraaminosalicylic acid. The streptomycin material was superior in sputum decrease and sputum conversion. The better results with the streptomycin therapy were probably due to the use of collapse therapy. No collapse therapy was instituted during the observation time before treatment with paraaminosalicylic acid, during treatment and during the follow-up period. There were no pronounced differences with respect to changes in cavities in the two groups. Continued improvement was observed much more frequently in the follow-up of the patients treated with paraaminosalicylic acid than in those treated with streptomycin. Toxemic reactions did not occur with paraaminosalicylic acid therapy.

Factors Influencing Streptomycin Therapy in Pulmonary Tuberculosis.—Tucker reports on 86 patients with pulmonary tuberculosis treated with streptomycin at the Minneapolis Veterans Administration Hospital during the period of January 1947 to January 1949. The patients were given 2 Gm. of streptomycin daily for 120 days; later 2 Gm. daily were given for 60 days and then 1 Gm. daily for 120 days. Alternation of regimens of 1 Gm. and 0.5 Gm. daily for 42 days was begun in April 1948. All patients had a definitely acute or subacute inflammatory tuberculous component; a proportion of these had mixtures of chronic disease and more recent disease. Results in this "mixed" group were observed to be definitely inferior to those in the "relatively unmixed" acute and subacute cases in all categories studied. Results in the 86 patients were superior when collapse therapy was used in conjunction with the period of maximum benefit from streptomycin therapy, which in general consisted of the first eight months after the start of antibiotic therapy. This was true for both "relatively unmixed" acute and chronic cases and for "mixed" cases, but especially for the latter. These observations appear to be largely independent of variations in the streptomycin regimens employed. Any degree of roentgenographically observed improvement at the end of the intial treatment period is inadequate for comparison of results with various regimens employed or in groups treated. Standardized measures of the degree of roentgen improvement assist roentgenographic evaluation, particularly in the first months after the start of therapy. Sputum conversion rates and relapse rates are important additional criteria for evaluation of results. Mortality rates are of increasing value in later follow-up periods. The response of the cavitary component to streptomycin therapy is the chief factor determining the outcome. Prompt and energetic measures directed toward the control of that component present the best opportunity for further improvement of the already distinguished achievement of streptomycin therapy of pulmonary tuberculosis.

Experimental Medicine and Surgery, Brooklyn

7:237-404 (Nov.) 1949. Partial Index

Notes on Electron Microscopy of Tissue Sections and Segregations. Submicroscopic Spherical Bodies in Human Carcinoma. A. E. Gessler, K. S. McCarty, M. C. Parkinson and J. M. Bardet.—p. 237.
Review of Cancer Research. J. E. Gregory.—p. 289.
Effects of Combined Dietary Regime on Patients with Malignant Tumors. M. Gerson.—p. 299.
Auricular Fibrillation Caused by Electric Accident (Effects of Electric Current on Human Body). C. L. Gesseln.—p. 335.
Use of Hesperidin-C in Treatment of Abnormal Capillary Fragility. S. B. Barinbaw.—p. 358.
Effects of High Sodium Diet and of High Potassium Diet on Adrenals and Kidney of Desert Kangaroo Rat and Domestic Albino Rat. J. Nichols.—p. 366.
New Type of Hemolysis. B. Kisch.—p. 377.
Aglycone Flavonoids in Experimental Chemotherapy. G. J. Martin, J. Carley Jr. and J. N. Moss.—p. 391.

Florida Medical Association Journal, Jacksonville

36:333-392 (Dec.) 1949

Pediatrics: Current Trends in Practice and Training. W. W. Quillian.—p. 351.
*Streptomycin Therapy in Granuloma Inguinale. R. F. Sondag, J. F. Henry and J. Batteke.—p. 355.
*Prevention and Treatment of Oliguria and Anuria Due to Sulfonamides. A. J. Butt and R. Birchall.—p. 360.

Streptomycin in Granuloma Inguinale.—Sondag and his co-workers treated 597 patients with granuloma inguinale with streptomycin at the Rapid Treatment Center in Melbourne, Fla. Four hundred and three patients (67.5 per cent) were between the ages of 16 and 30 years, the period of maximal sexual activity. All except 1 patient (male) were Negro. The first 470 patients were treated intramuscularly with 0.66 Gm. of streptomycin diluted in 4 cc. of water, isotonic sodium chloride solution or procaine hydrochloride solution every four hours, giving a total daily dose of 4 Gm. The next 127 patients were given 0.5 Gm. of streptomycin in 5 cc. of diluent every six hours by intramuscular route, or a total daily dosage of 2 Gm. In both schedules the amount necessary to effect healing ranged from 5 Gm. to over 50 Gm., 1 patient receiving a total of 70 Gm. The average period of treatment was thirteen days. The lesions were healed in 202 of the 470 patients (43 per cent) after 20 Gm. of streptomycin were given. The lesions were healed in 51 of the 127 patients (40 per cent) after only 10 Gm. of the drug were given. The 2 Gm. daily schedule, therefore, was more effective with respect to total dosage required to effect healing. There were only 14 patients whose lesions failed to heal completely, and in 9 of these the lesions were squamous cell carcinoma. The tendency to relapse is a notorious feature of granuloma inguinale. Twenty-eight of the authors' patients were readmitted for additional treatment. An additional 178 patients (30 per cent), followed from three to sixteen months, yielded 164 (92 per cent) cures at the time of the last follow-up examination. Only 3 patients had toxic reactions.

Oliguria and Anuria Due to Sulfonamide Compounds.—According to Butt and Birchall, oliguria and anuria which may follow the administration of sulfonamide compounds are due either to mechanical obstruction or to destruction of the epithelial cells of the distal convoluted tubules. It is necessary to differentiate obstructive from nephrotoxic anuria, because the methods for their prevention and treatment are different. Obstructive and nephrotoxic anuria can be differentiated by cystoscopy and ureteral catheterization. The demonstration of impacted crystals in the lower part of the urinary tract indicates obstruction; the absence of urine or the observation of a small amount of urine free from crystals indicates that the anuria is due to toxic nephrosis. Prevention of obstructive anuria is based on the careful selection of the particular sulfonamide derivative employed and on the maintenance of both an adequate intake of fluid and an alkaline urine. Prevention of nephrotoxic reactions is based on the careful exclusion from sulfonamide therapy of all patients who have shown evidence of previous sulfonamide sensitivity. The value of sulfonamide mixtures in the prevention of nephrotoxic reactions has not been clinically established. Treatment of obstructive anuria consists of the dislodgement of the impacted crystals by ureteral catheterization followed by efforts designed to establish and maintain a rapid flow of dilute alkaline urine. Treatment of anuria due to acute toxic nephrosis consists primarily of a rigid restriction of the basal fluid intake to 500 cc. in twenty-four hours and of the salt intake of 4 Gm. in twenty-four hours. The amount of vomitus, diarrhea and duodenal drainage must be carefully measured and replaced with an equal amount of isotonic solution of sodium chloride. The caloric intake is restricted to carbohydrate in an attempt to decrease protein breakdown and inhibit the development of ketosis.

Georgia Medical Association Journal, Atlanta

38:525-606 (Dec.) 1949

*Two Years' Experience with Diagnosis of Uterine Cancer by Means of Vaginal Smear as Routine Office Procedure. H. C. Frech.—p. 525.
Tumors of Parotid Glands: Review of 57 Cases. C. S. Jones, J. E. Scarborough and R. L. Brown.—p. 530.
Borderline Diagnosis of Carcinoma of Breast. H. Wammock.—p. 533.
Bleeding Duodenal Polyp: Report of Case. M. Johnson and W. S. Dorouch.—p. 542.
Transverse Abdominal Incisions: Analysis of 1,000 Consecutive Cases. W. G. Whitaker Jr., H. Rogers, J. G. Dorden Jr. and R. L. Robertson Jr.—p. 544.
New Principle in Douching. R. B. Greenblatt and N. H. Brown.—p. 549.
The Threat Continues. E. Callaway.—p. 553.

Vaginal Smear in Diagnosis of Uterine Cancer.—Frech examined vaginal smears of every female patient regardless of the presence or absence of gynecologic symptoms and smears were repeated at six month intervals. Three thousand eight hundred and ninety-three slides in 1,112 cases were examined, also 488 slides in 244 cases of other physicians. In the series from his own practice 13 smears were positive. Two proved to be adenocarcinoma of the ovary, 7 preinvasive carcinoma of the cervix, 3 invasive squamous cell carcinoma of the cervix and 1 adenocarcinoma of the uterus, giving a percentage accuracy of 94 per cent. In addition, 6 slides were positive which biopsy proved to represent squamous cell metaplasia. In 1 of the 6 positive cases carcinoma of the cervix developed later. Inflammation, diabetes and vitamin B deficiency may cause changes in the nuclear structure of the cells, which closely resemble those seen in malignant conditions. Twenty-one smears in one series were called suspicious, and 8 of these were proved negative by biopsy; 2 patients with suspicious smears had vitamin B deficiency and improved with therapy; 1 had a pinworm infection of the vagina; 2 had diabetes, and when the diabetes was controlled the smears became normal; 2 women were pregnant, and 2 had trichomonas. After this was treated, repeat smears were negative. None of the patients with preinvasive carcinoma of the cervix presented gynecologic complaints. Of the 488 slides examined for other physicians 3 were positive; 1 lesion proved to be preinvasive carcinoma of the cervix, 1 invasive carcinoma of the cervix and 1 adenocarcinoma of the rectum. Ten patients in this group had slides that were considered suggestive of lesions but on repeated smears and biopsies were proved to be negative. The author concludes that the Papanicolaou technic is definitely an aid in screening patients. Its importance lies in the fact that it points out when biopsy should be done in a cervix of normal appearance.

Journal Pharmacology & Exper. Therap., Baltimore

97:251-384 (Nov.) 1949. Partial Index

Studies on Veratrum Alkaloids: IX. Inhibition by Veratrosine of Cardioaccelerator Action of Epinephrine and of Norepinephrine. O. Krayer.—p. 256.
Absorption Spectra and Pharmacological Actions of Tetrazole Derivatives. F. W. Schueler, S. C. Wang, R. M. Featherstone and E. G. Gross.—p. 266.
Therapeutic and Toxic Properties of Oxygen Versus Sulfur Bound Trivalent Antimony in Organic Antimonials. G. W. Lottermoser, W. T. Haskins and F. J. Brady.—p. 276.
Ultraviolet Spectrophotometric Method for Determination of Theophylline and Theobromine in Blood and Tissues. J. A. Schack and S. H. Waxler.—p. 283.
Relative Role of Liver and Kidneys in Detoxication of Standardized Curare Preparation (Intocostrin). A. R. Kelly and F. E. Shideman.—p. 292.
Inotropic Synergism of Cardiac Glucosides with Calcium Acting on Frog's Heart in Human Serum. W. T. Salter, L. J. Sciarini and B. Rubin.—p. 314.
Dynamics of Curarization. A. C. Guyton and R. C. Breder.—p. 322.
Neuropharmacological Study on Effect of Myanesin (Tolserol) on Motor Systems. E. Henneman, A. Kaplan and K. Unna.—p. 331.
Systemic Actions of Thioglycerol with Special Reference to Goitrogenic Activity. C. J. Kender and R. W. Elsner.—p. 349.

New England Journal of Medicine, Boston

241:993-1030 (Dec. 22) 1949

*Generalized Intestinal Polyposis and Melanin Spots of Oral Mucosa, Lips and Digits: Syndrome of Diagnostic Significance. H. Jeghers, V. A. McKusick and K. H. Katz.—p. 993.
Hypertension Due to Partial Renovascular Occlusion: Report of Case. P. M. Cornwell.—p. 1006.
Pulmonary Effects of Cocoanut Grove Fire: Five-Year Follow-Up Study. H. S. Pittman and R. Schatzki.—p. 1008.
Oddity of Pregnancy. L. Levine and R. H. Goodwin.—p. 1010.
*Vitamin Supplementation in Health and Disease. P. J. Culver. —p. 1011.
(Carcinoma of Bladder Cured by Radiation.) Radiation Fibrosis of Bladder and Ureters. Papillary Carcinoma, Grade III of Left Renal Pelvis.—p. 1017.
Glioblastoma Multiforme of Corpus Callosum, Probably Arising from Astrocytoma.—p. 1020.

241:1031-1076 (Dec. 29) 1949

*Generalized Intestinal Polyposis and Melanin Spots of Oral Mucosa, Lips and Digits (Concluded): Syndrome of Diagnostic Significance. H. Jeghers, V. A. McKusick and K. H. Katz.—p. 1031.
*Aureomycin Treatment of Herpes Zoster. M. Finland, E. F. Finnerty Jr., H. S. Collins and others.—p. 1037.
Prosthesis Following Hemipelvectomy. J. F. Cooper and G. W. Taylor.—p. 1047.
Management of Trial Labor. T. F. Foley.—p. 1049.
*Vitamin Supplementation in Health and Disease (Concluded). P. J. Culver.—p. 1050.
Islet-Cell Adenoma of Pancreas. Epilepsy. Carcinoma of Thyroid Gland.—p. 1063.
Endometriosis of Pelvis and Retroperitoneal Tissues. Endometrial Metastasis to Iliac Lymph Node.—p. 1066.

Intestinal Polyposis and Melanin Spots.—Jeghers and his associates say that in 1944 one of them reported 2 patients with a distinctive type of melanin pigmentation of the oral mucosa, lips and digits associated with intestinal polyposis. Since then 10 cases (including the 2 reported in 1944) have been collected from five different hospitals. By supplementing these cases with those discovered in the literature and with data from personal communications, it has been possible to assemble a total of 22 proved, 5 probable and 4 possible cases. The syndrome presents two features: distinctive melanin spots on the buccal mucosa and lips, (the face and digits may be involved to a variable extent, but the oral pigmentation is the sine qua non of this portion of the syndrome) and polyposis of the small intestine. The stomach, colon and rectum may be involved, but presence of polyps in the small intestine is a constant feature of the syndrome. Adenomatosis and papillomatosis are synonyms for this form of polyposis. The group of 10 cases included 6 in which more than one member of the same family was involved. Sufficient genealogic data are reported to demonstrate the hereditary nature of the syndrome, which appears to be inherited as a simple mendelian dominant. Sporadic cases also occur. The syndrome appears to have important diagnostic significance in that the external manifestations may be of considerable value in the recognition of the intestinal condition. Three additional cases have been called to the attention of the authors since the preparation of this report.

Vitamin Supplementation in Health and Disease.—Culver questions the need for widespread consumption of purified vitamin supplements. Vitamin deficiency states are now infrequent in the United States. The lack of objective evidence of any improvement in health, fitness or work capacity of large population groups who received purified vitamin supplements suggests that the average American diet is adequate enough to prevent subclinical vitamin deficiency. Many of the so-called signs of vitamin deficiency are nonspecific and are not alleviated by vitamin supplementation. The use of vitamins as supportive therapy in infections and chronic diseases is largely empiric. Therefore there seems to be little need for vitamin supplements from the nutritional point of view. Although many claims for the therapeutic value of vitamins in certain pathologic states will not withstand the test of controlled study, there are some conditions in which a specific vitamin has value by virtue of its pharmacologic properties. If a definite state of avitaminosis exists, long-term use of vitamin supplements is unnecessary. The best suggestion is that of Cowgill to "vitaminize" the patient for a few days with three to five times the requirements and then establish a good diet. If a person has a good diet, he will not benefit from vitamin supplements, and if the patient does not have an adequate diet the treatment is a good diet, not vitamins.

Aureomycin in Herpes Zoster.—Finland and his associates treated 24 patients with clinically characteristic lesions of herpes zoster with aureomycin. The drug appeared to halt the progress of this disease and to bring about rapid healing of the lesions. Vesicles dried up and became encrusted in the first two to four days of the treatment and healed rapidly and completely. In occasional patients new lesions appeared during the first day of treatment but not later unless the therapy was interrupted. The pain accompanying the acute lesions subsided after the first day of therapy. Postherpetic pain seldom occurred in patients whose treatment was begun early and was maintained in adequate dosage, but pain was not prevented in patients in whom treatment was begun more than two weeks after the first appearance of the lesions. The effective oral dosage was 4 Gm. daily (1 Gm. after each meal and at bedtime) for two to four days, or until the lesions were well dried and encrusted. Half this dose was given for an additional three to five days. This dosage may be used throughout when the larger doses are not tolerated. Intravenous doses of 500 mg. of the drug daily likewise appeared to be effective and may be used if the oral dose is not well tolerated. The optimum intravenous dosage of aureomycin was not ascertained.

New Orleans Medical and Surgical Journal

102:289-332 (Dec.) 1949

*Use of Anticoagulants in Treatment and Prevention of Coronary Artery Disease and Myocardial Infarction. E. S. Nichol.—p. 289.
Vagotomy in Treatment of Peptic Ulceration. G. R. Walters and J. T. Sanders.—p. 294.
Gastroenterological Evaluation of Vagotomy in Treatment of Ulcer. M. Shushan.—p. 298.
Present Status of Analgesia and Anesthesia in Obstetrics. I. Dyer. —p. 303.
Management of Acne in General Practice. H. W. Jolly Jr. and M. E. Kopfler.—p. 312.
Case of Bilateral Spontaneous Pneumothorax. J. Faust.—p. 318.
Cerebral Palsy Today. L. K. Loomis.—p. 321.

Anticoagulants in Coronary Artery Disease.—Nichol reports on 98 patients treated with anticoagulants for coronary thrombosis. These data compared favorably with the study of the American Heart Association Committee. Major hemorrhagic complications, chiefly gross hematuria, developed in 10 per cent of patients in this series. There were no deaths definitely due to hemorrhage. He also presents observation on 54 patients with long-term dicumarol® therapy, continued for three to sixty-one months in order to prevent recurrent attacks of myocardial infarction. Although no control series existed, the results encourage further trial of long-term prophylaxis.

Pennsylvania Medical Journal, Harrisburg

52:1617-1776 (Dec.) 1949

Socialized Medicine as I Saw It. R. J. Gampell.—p. 1633.
Problems in Treatment of Diabetes Mellitus. A. R. Colwell.—p. 1638.
Treatment of Juvenile Diabetes. W. W. Dyer.—p. 1644.
Viral and Rickettsial Infections of Lung: Comments on Problem of Specific Therapy. J. E. Salk.—p. 1650.
Viral Hepatitis—Progress and Problems. W. P. Havens Jr.—p. 1653.
Future for Preventive Medicine. P. H. Long.—p. 1658.
Surgical Aspects of Congenital Heart Disease. J. Johnson.—p. 1661.
Angiocardiography and Cardiac Catheterization as Aids in Diagnosis of Congenital Heart Disease. H. F. Zinsser Jr. and R. L. Kendrick. —p. 1665.
Can Mongolism Be Eliminated? R. E. Sangston.—p. 1671.

Psychiatric Quarterly, Utica, N. Y.

23:617-836 (Oct.) 1949. Partial Index

350 Cases of Prefrontal Lobotomy. H. J. Worthing, H. Brill and H. Wigderson.—p. 617.
Preliminary Study of Hypnotizability of Psychotic Patients. C. P. Wilson, H. H. Cormen and A. A. Cole.—p. 657.
Preliminary Report on Ocular Findings in 323 Schizophrenic Patients. M. Cohen.—p. 667.
General Survey of Insulin-Treated Patients After Five Years. S. Kwalwasser and L. C. Robinson.—p. 672.
Comparisons of Psychotherapeutic Methods in Schizophrenia. S. D. Lipton.—p. 705.
Prenatal Symptoms in Postpartum Psychotic Reactions: Preliminary Report. R. Seidenberg and L. Harris.—p. 715.
Multiple-Factor Psychosomatic Theory of Schizophrenia: Attempt at Consistent Conceptualization. L. Bellak.—p. 730.
Mother Goose and the Gastro-Intestinal Tract. F. J. Mott.—p. 756.

Psychoanalytic Review, Albany, N. Y.

36:333-462 (Oct.) 1949. **Partial Index**

Ego of the Brain Wounded. G. Bychowski.—p. 333.
Psychopathological Reactions to Extreme Social Displacements (Refugee Neuroses). S. Pedersen.—p. 344.
Existence of Freudian Unconscious in Structure and Function of Nervous System. J. Neuman.—p. 355.
Integrative Approach to Individual and Group Psychology. M. L. Coleman.—p. 389.
Treatment of Criminals. M. Schmideberg.—p. 403.
What is the Therapeutic Value of Abreaction? N. Thornton.—p. 411.
Political Life and Super-Ego Regression. J. Fleischer.—p. 416.
Contribution Towards Psychology of Parties. M. Brachyahu.—p. 429.

Southern Surgeon, Atlanta, Ga.

15:887-956 (Dec.) 1949

Massive Hemorrhage from Upper Digestive Tract with Special Reference to Peptic Ulcer. G. V. Brindley, F. M. Covert and S. McL. Long.—p. 887.
Stricture of Common Bile Duct: Etiology and Treatment. H. Wilson and C. F. Yates.—p. 898.
Intramedullary Nailing of Fractures of Shaft of Femur. C. T. Berry.—p. 907.
Sarcoma of Rectum. D. Dunavant and C. E. Gillespie.—p. 916.
Diverticulitis of Colon. W. A. Johns.—p. 922.
Does the Pathologist Need the Clinician's Cooperation? P. P. Ladewig.—p. 927.

Surgery, St. Louis

26:889-1064 (Dec.) 1949

Problems in Dynamics of Blood Flow: I. Conditions Controlling Collateral Circulation in Presence of Arteriovenous Fistula, Following Ligation of Artery. E. Holman.—p. 889.
Study of Collateral Circulation After Excision of Arteriovenous Fistulas. L. H. Bosher Jr., F. Harper and I. A. Bigger.—p. 918.
Study of Cardiac Frontal Area in Patients with Arteriovenous Fistulas. H. B. Shumacker Jr. and N. M. Stahl.—p. 928.
Experimental and Clinical Use of Vein Grafts to Replace Defects of Large Arteries. J. Johnson, C. K. Kirby, F. E. Greifenstein and A. Castillo.—p. 945.
*Complications of Anticoagulant Therapy. G. D. Lilly and R. M. Lee.—p. 957.
*Venous and Lymphatic Stasis in Lower Extremities: I. Test for Incompetence in Perforating Veins: II. Simple Method of Adequate Control. W. J. M. Scott and M. Radakovich.—p. 970.
Walking Venous Pressure Test as Method of Evaluation of Varicose Veins. E. A. White and R. Warren.—p. 987.
*Follow-Up Study of Patients with Thromboangiitis Obliterans (Buerger's Disease). K. N. Campbell, B. M. Harris and F. A. Colter.—p. 1003.
Evaluation of Sympathetic Neurectomy in Raynaud's Disease: Based on Follow-Up Study of 40 Patients. D. A. Felder, F. A. Simeone, R. R. Linton and C. E. Welch.—p. 1014.
Hypertensive Vascular Disease Associated with Quadrilateral Raynaud's Disease Treated by Total Sympathectomy. I. Leinwand, J. W. Hinton and J. W. Lord Jr.—p. 1034.

Complications of Anticoagulant Therapy.—Lilly and Lee describe 5 previously unreported deaths and 5 serious postoperative complications which resulted from anticoagulant therapy. These cases came to the attention of the authors without any effort on their part to conduct a careful investigation of complications of anticoagulant therapy. They believe that these cases represent only a fraction of the complications which have occurred in their community in recent years. They stress that reliable laboratory procedures for the estimation of prothrombin levels are not available. Dicumarol® is a hazardous therapeutic agent at best and may assume the role of a fatal poison. It may cause a sudden, severe and fatal hemorrhage in postoperative patients, even when carefully controlled. There is no justification for the employment of anticoagulant therapy in phlebothrombosis and thrombophlebitis limited to the lower extremity below the groin, because proper venous interruption is a more certain, much safer, quicker and much less expensive method for the control of this condition. The prophylactic use of anticoagulants in postoperative patients is fraught with hazards. Correct bed posture and properly supervised exercises will accomplish the same results safely and economically.

Venous and Lymphatic Stasis in the Lower Extremities.—Scott and Radakovich say that the increased protein-rich extracellular fluid, which is present in venous stasis and chronic lymphedema, induces fibrosis and provides a favorable environment for infection. Pigmentation of the skin and induration of the subcutaneous tissues usually develop in time, often complicated by chronic cellulitis, a persistent dermatitis or acute inflammatory episodes of localized phlebitis or streptococcic infection. When varicosities can be seen or when the engorged venous channels can be felt, tests for incompetence of the communicating veins are available (Trendelenburg test and Ochsner-Mahorner test), but when induration of the skin and subcutaneous tissues has occurred the veins can often neither be seen nor felt and the aforementioned tests are inadequate. Under these conditions a comparative measurement of volumetric changes in the leg with change in position has proved useful to the authors in determining incompetency of the perforating veins. In their test the patient first lies supine for five minutes with the limb elevated about 45 degrees; then a 25 foot (760 cm.) tape is secured 2 inches (5 cm.) above the tip of the external malleolus. The limb is then wrapped with twenty consecutive turns of the tape, the terminal point is marked and a reading made from the tape. With patient and limb in the same position, the tape is removed and a tourniquet applied. The patient stands with the tourniquet in place, and a measurement is taken immediately. After this second measurement has been made the tourniquet is removed, and the patient is told to stand as quietly as possible for five minutes. Then a third measurement is taken. The fourth measurement repeats the first after the patient has again reclined on the table and elevated the limb for five minutes. The greatest differences were noted in patients with incompetency of the perforating veins. Most of the physical measures previously in common use had the defect of not overcoming the venous stasis in the lower part of the legs. They use an aeropulse legging, which consists of an outer duck casing containing a butterfly-shaped balloon in an inner pocket. The balloon is inflated and the pressure changes with walking. In effect a deep fascia has been placed outside of the skin, and the subcutaneous veins and lymphatic spaces are compressed rhythmically on walking. This pulsating pressure, powered by the muscular contractions in the leg and exerted throughout the lower part of the leg, is important in driving out the excess of extracellular fluid. Lymphedema and venous stasis were effectively controlled, induration of the subcutaneous tissues was reduced, ulcers were healed, and recurrent attacks of cellulitis and phlebitis were curbed.

Follow-Up Study of Patients with Thromboangiitis Obliterans (Buerger's Disease).—Campbell and his collaborators report a follow-up study on 149 patients selected because they fulfilled the accepted criteria. All but 2 of these were males. The average age of onset of the disease was 34.9 years, with the youngest patient giving a history of onset at the age of 15, while the oldest age of onset was 53 years. Coldness of the involved extremity was present in 126 of the 149 patients. Raynaud's phenomena were present in 24 cases and could be elicited by exposure to ice water in every instance. The 24 patients had organic changes in the digits and evidence of occlusive arterial disease. Pain in the involved extremity was present in 143 of the 149 patients. Intermittent claudication was present in 97 patients. There was ulceration of a digit, foot, leg or amputation stump in 74 instances. Visceral involvement was present in 43: 1 renal, 17 cardiac, 7 splanchnic, 5 ophthalmic and 13 cerebral. Seventy-six patients had either definite clinical signs, a history or histologic confirmation of superficial migratory phlebitis. Sixty-eight patients had had one or more amputations during the course of their illness. One patient had undergone thirty-four amputations and 2 had had thirty amputations. Between 1940 and 1948 only 6 patients required major amputations. The use of chemotherapeutic and antibiotic agents had lessened the number of secondary amputations following the removal of a phalanx or digit, because of the better control of infection. Of the 38 patients who underwent sympathectomy, 14 had a satisfactory response but that of the remaining 24 was fair or poor. If sympathectomy is to be employed it should be done early. Of the 121 living patients, 88 are still using tobacco. Psychosomatic factors seem important in thromboangiitis obliterans. Many of the patients exhibited a belligerent, bellicose type of personality with a tendency to refuse to heed the advice of the physician. Several of the patients had become drug addicts. Many had recurrent episodes of phlebitis or further vascular occlusion while under obvious stress from environmental factors.

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FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

19:99-176 (Nov.) 1949

Orbital Tumours. J. B. Hamilton.—p. 101.
*Lateral Lympho-Epithelial Cyst of Neck ("Branchial" Cyst). E. S. J. King.—p. 109.
Resuscitation and Anaesthesia. J. F. McCulloch.—p. 122.
Some Aspects of Surgery of Pancreas. W. Maxwell.—p. 132.
Role of Vaginal Hysterectomy in Gynaecological Surgery. C. Chapman. —p. 139.
Results of Surgical and Radiological Treatment in Primary Carcinoma of Breast. R. Fowler and C. McCall.—p. 142.

Lateral Lymphoepithelial Cyst of Neck (Branchial Cyst).—According to King the commonest cysts of the neck are of two topographic groups, the medial group, lying in or near the midline, and the lateral group, usually found under the anterior border of the sternocleidomastoid muscle. One form, which frequently occupies a position near the bifurcation of the carotid arteries and histologically shows an epithelial lining with immediately subjacent lymphoid tissue, has been designated "branchial" cyst. The author discusses this type on the basis of observations on 76 cysts. These cysts show a considerable range of variation in both position and structure. The criterion proposed for inclusion of a cyst in this group is the existence of an epithelial lining with subjacent lymphoid tissue at least in some part (if not the whole) of the cyst wall. The cyst commonly lies under the anterior border of the sternocleidomastoid muscle at the level of the bifurcation of the carotid arteries. The majority do not project between the vessels but lie superficial to them. Some cysts are indistinguishable from an enlarged lymph node; others occur associated with the salivary glands or are found deep in the neck close to the pharyngeal wall. Occasionally cysts of this type are found in the thyroid and thymus. Sixty-five of the 76 cysts were unilocular. The epithelium lining the cysts is usually squamous in type. The underlying "lymphoid" stroma sometimes has the morphologic characteristics of thymus. This was the case in 8 of the 76 cases observed. The tissue contains Hassall's corpuscles in various stages of development, and many of them show cystic change. The author rejects many of the hypotheses regarding these cysts, partly because embryologic investigations have indicated their inadequacy. The term "branchial cyst" is misleading and should be discarded. The term "lateral lymphoepithelial cyst" is suggested for the group because of the characteristic histologic aspects. This term seems preferable to one referring to some doubtful origin.

British Journal of Venereal Diseases, London

25:169-220 (Dec.) 1949

Recent Advances in Study of Venereal Diseases. J. E. Moore.—p. 169.
Venereal Disease as Cause of Infertility and Sterility: Assessment and Treatment. R. H. Boyd.—p. 179.
Reiter's Disease. A. H. Harkness.—p. 183.

British Medical Journal, London

2:1367-1426 (Dec. 17) 1949

Crystalline Anti-Pernicious-Anaemia Factor. E. L. Smith.—p. 1367.
*Vitamin B_{12} in Pernicious Anaemia: Parenteral Administration. C. C. Ungley.—p. 1370.
Vitamin F in the Menopause. H. C. McLaren.—p. 1378.
Treatment of Dupuytren's Contracture with Vitamin E. G. R. Thomson. —p. 1382.
Polycythaemia with Leucoerythroblastosis. F. G. Marson and M. J. Meynell.—p. 1384.
Case of Weil's Disease, with Tests for Liver Function. F. E. de W. Cayley.—p. 1386.
Primary Lymphosarcoma of Appendix Occurring in Childhood. W. H. Galloway and E. J. Owens.—p. 1387.
Surgical Management of the Aged: Survey of Results of Major Surgery in 99 Patients over 70. P. Childs and S. A. Mason.—p. 1389.

Vitamin B_{12} in Pernicious Anemia.—According to Ungley the isolation of a red crystalline anti-pernicious-anemia factor was achieved almost simultaneously in the United States and in Great Britain. He is concerned with the crystalline material isolated by Smith in Britain, which has proved to be identical with vitamin B_{12}. The 53 patients selected for treatment had the usual diagnostic features of pernicious anemia, including megaloblastic marrow and histamine-fast achlorhydria. A few patients had relapsed after stopping treatment, but most had never been treated. To limit the intake of extraneous hematopoietic factors during the initial test period, most of the foods containing such factors were excluded from the diet. Reticulocytes were counted daily; hemoglobin was determined by the cyanhematin method, and red blood cells were counted every five days. Treatment was withheld for a control period of seven to 10 days so that patients showing signs of spontaneous remission could be excluded. Vitamin B_{12} was given intramuscularly in a single dose. Doses were graded logarithmically from 1.25 to 160 micrograms. While doses of 1.25 micrograms had little or no effect, 2.5 micrograms produced a definite but small response. Responses in 15 days to 5 and 7 micrograms were on the average somewhat below, and to 10 micrograms just up to, expectation, with respect to reticulocytes and red blood cells. Only in this limited sense can 10 micrograms be regarded as a minimal effective dose. Larger doses produced still greater increase of red blood cells. Maintenance doses of 10 micrograms of vitamin B_{12} every two weeks were satisfactory in 18 out of 21 patients followed for six to 15 months. The exceptions were 3 patients whose sore tongue was not completely relieved, one having macrocytosis in addition. Six women had iron deficiency at eight to fifteen weeks, which was relieved by treatment with ferrous sulfate.

Journal of Endocrinology, London

6:121-244 (Oct.) 1949. **Partial Index**

Histochemical Demonstration of Ketosteroids in Adrenal Tissue. R. J. Boscott and A. M. Mandl.—p. 132.
Influence of Thiouracil on Reproduction and Growth in Rat. S. B. Barker.—p. 137.
Relative Growth of Mammary Gland in Normal, Gonadectomized and Adrenalectomized Rats. A. T. Cowie.—p. 145.
Some Effects of Pregnancy and Lactation on Liver. R. M. Campbell and H. W. Kosterlitz.—p. 171.
Neutral Steroids of Human Urine. S. L. Tompsett.—p. 192.
Reaction of Body to Multiple Ovarian Grafts. M. M. Breward and S. Zuckerman.—p. 226.
Investigation of Human Thyroid Function with Use of Small Doses of Radioactive Iodine, and Effect of Thyrotrophic Hormone on I^{131} Uptake and Excretion. M. Reiss, R. E. Hemphill, B. M. Murphy and others.—p. 235.

Journal of Hygiene, London

47:221-336 (Sept.) 1949. **Partial Index**

Association of Certain Types (Alpha and Beta) of Bact. Coli with Infantile Gastro-Enteritis. J. Smith.—p. 221.
*Study of Herpes Zoster Particularly in Its Relationship to Chickenpox. H. E. Seiler.—p. 253.
Evaluation of Richardson's Verification Test in Sero-Diagnosis of Syphilis. G. F. Roberts and J. Swale.—p. 263.
Quarterly Ammonium Compounds: New Technic for Study of Their Bactericidal Action and Results Obtained with Cetavlon (Cetyltrimethylammonium Bromide). G. E. Davies.—p. 271.
Glycine and Formic Hydrogenlyase. J. Gordon and L. H. Strickland. —p. 278.
Relative Viability of Human Spermatozoa. A. C. Crooke and A. M. Mandl.—p. 297.
Effect of Treatment at Sewage Works on Numbers and Types of Bacteria in Sewage. L. A. Allen, E. Brooks and I. L. Williams.—p. 303.
Destruction of Bacteria in Sewage and Other Liquids by Chlorine and by Cyanogen Chloride. L. A. Allen and E. Brooks.—p. 320.

Herpes Zoster and Chickenpox.—Seiler presents the results of a field survey on herpes zoster over a period of eighteen months. He reviews a total of 246 patients, only 16 per cent of whom had had hospital treatment. It is calculated that the yearly incidence is approximately 2 per thousand population. Full investigation and follow-up studies were undertaken in 184 cases. The dorsal, supraorbital and cervical regions were affected in almost 90 per cent of the cases. Herpes generalisatus occurred in 7 (3.8 per cent) of the cases, recurrent herpes zoster in 6 (3.3 per cent). Three fifths of the patients were over 45 years of age. Eleven patients had previously associated with other persons with herpes zoster, while 3 gave a suggestive history of prior contact with chickenpox. A condition indistinguishable from chickenpox occurred among the contacts of 10 patients, 12 being affected, and there was 1 instance of concurrent herpes

zoster and chickenpox. The author is of the opinion that the evidence does not indicate a significant association with chickenpox prior to the onset of herpes zoster but that a condition indistinguishable from chickenpox may follow contact with herpes zoster. This may be a generalized manifestation of the virus of zoster rather than true chickenpox.

Journal of Mental Science, London

98:785-1068 (Oct.) 1949. Partial Index

Reflections on Nature of Affective Disorders, Arising from Results of Prefrontal Leucotomy. M. Partridge.—p. 795.
Investigation into Intellectual Changes Following Prefrontal Leucotomy. R. K. Freudenberg and J. P. S. Robertson.—p. 826.
Delinquent Types of Mentally Defective Persons. K. O. Milner. —p. 843.
Educational Types of Mentally Defective Children. L. T. Hilliard. —p. 860.
Dynamic Factors in Aphasia. R. Klein.—p. 874.
Observations on Foreign-Body Swallowing in Prisons. J. J. Landers. —p. 897.
*Treatment of Mental Defectives with Thiamine. G. de M. Rudolf. —p. 910.
Treatment of Depression with Desoxyephedrine (Methedrine). G. de M. Rudolf.—p. 920.
Action of Glutamic Acid in Hypoglycaemic Coma. H. Weil-Malherbe. —p. 930.
Physiological Instability in Children. G. D. Morgan.—p. 949.
Differential Diagnosis of Some Emotional Disorders of Adolescence (with Special Reference to Early Schizophrenia). H. Edelston.—p. 960.
Slowing of Alpha-Rhythm of Electro-Encephalogram and Its Association with Mental Deterioration and Epilepsy. A. Stoller.—p. 972.

Thiamine in Treatment of Mental Defectives.—According to Rudolf thiamine has for many years been known as the antineuritic vitamin, although action of this substance in organic nervous trouble is not established. Less well known is its action on the higher cerebral processes. Investigations appear to show that it has a definite effect on these. The entire population, 687 persons, of a mental deficiency colony was examined. Those who had shown no improvement in behavior, either in their lodges, at school or at work, were given 3 mg. thiamine once daily for five or six months. The patients had been in the colony for mental defectives for three to 17 years. Five subjects became more violent or destructive. In 3 of these cases the treatment was discontinued. Of the 90 subjects who received the full course, 44 showed improvement in one or more of the following aspects: behavior in lodge, work or school, social age and intelligence quotient. Further observation of these improvements is required to determine whether they are permanent and progressive in nature.

Lancet, London

2:1115-1162 (Dec. 17) 1949

Peptic Ulcer Cases Reviewed After Ten Years: Effect of Medical Treatment and Indications for Gastrectomy. L. Martin and N. Lewis. —p. 1115.
*Penicillin-Resistant Staphylococcal Infection in Maternity Hospital. M. Barber, F. G. J. Hayhoe and J. E. M. Whitehead.—p. 1120.
Antipyretic Action of Cryogenine. G. Bourne.—p. 1126.
*Vitamin E in Intermittent Claudication. A. H. Ratcliffe.—p. 1128.
Inhibition by Methionine of Toxicity of Crystals from Agenized Zein: Observations on Leuconostoc Mesenteroides. J. G. Heathcote. —p. 1130.
Eosinophilic Leukaemia and Familial Eosinophilia: 2 Illustrative Cases. J. D. Gray and S. Shaw.—p. 1131.
Desoxycortone Acetate and Ascorbic Acid in Treatment of Rheumatoid Arthritis. D. Le Vay and G. E. Loxton.—p. 1134.

Penicillin-Resistant Staphylococcic Infection in Maternity Hospital.—Barber and associates say that in the course of a routine bacteriologic examination of material from a maternity hospital it became clear not only that there was a high incidence of staphylococcic infection among the infants but also that nearly all the infections were with penicillin-resistant strains of staphylococci. Investigations carried out for eight months, during which period the incidence of infections among children remained a fairly constant 14 per cent, revealed Staphylococcus pyogenes in 42 cases of infection. Thirty-six of these yielded penicillin-resistant strains only; 3 yielded penicillin-sensitive strains only; 3 yielded both penicillin-sensitive and penicillin-resistant strains. Conjunctival swabs taken from 35 healthy infants yielded cultures of Staph. pyogenes in 19 cases; in 15 all colonies tested were penicillin-resistant. The carrier state of the doctors and nurses of the hospital was studied on three occasions at three month intervals. The nasal carrier rate of Staph. pyogenes was 58 to 68 per cent, and 70 to 80 per cent of the carriers had penicillin-resistant strains. The skin (back of wrist) carrier rate, which was 51 per cent on February 22, was only 19 per cent on May 17 and 10 per cent on August 9. The domestic staff of the hospital was examined, and Staph. pyogenes was isolated from the nose or skin of 12 of 17 tested, but only 2 yielded penicillin-resistant strains. For comparative purposes nasal swabs were taken from 62 women working in a department store and living in an attached hostel. Though 33 were carrying Staph. pyogenes, none yielded a penicillin-resistant strain. All of 44 strains isolated from infective processes had a sensitivity to streptomycin similar to that of the Oxford staphylococcus. The same 44 strains were tested for sensitivity to sulfathiazole; 42 had a sensitivity similar to that of the Oxford staphylococcus, but 2 were considerably more resistant.

Vitamin E in Intermittent Claudication.—Ratcliffe reports observations on patients selected from the group reported on by Boyd and his co-workers and patients subsequently treated at the neurovascular clinic at the Manchester Royal Infirmary. Of the patients for whom alpha tocopherol therapy had been recommended by the neurovascular clinic 41 fulfilled all the requirements necessary for inclusion in this series. The walking test after three months' treatment showed that 34 were improved and 7 were not. There were 25 controls. The walking test showed that 5 of these were improved and 20 not. The author stresses that vitamin E is effective only when given in large doses and for a long time. From published reports and from a study of the patients treated at the neurovascular clinic, it seems that the optimum dosage is about 400 mg. daily. This should be given in the form of alpha tocopherol, the biologic activity of the beta and gamma tocopherols being considerably less. One of the most striking observations in connection with vitamin E therapy is the delay before the patient begins to notice improvement. In obliterative vascular disease this delay is about six weeks. Negative evidence of the effectiveness of vitamin E therapy with doses of less than 400 mg. daily for periods shorter than three months must therefore be considered inadmissible. Of the 7 unimproved patients in this series, 1, who was originally thought to have diffuse obliterative arteritis, later had a secondary popliteal thrombosis, which would be sufficient to prevent improvement. Examination of the case records of the other 6 did not reveal any common factor which might suggest that vitamin E therapy would not succeed.

Proceedings of Royal Society of Medicine, London

42:957-1044 (Dec.) 1949. Partial Index

Autoradiographs with Radio-Active Iodine. I. Doniach and S. R. Pelc. —p. 957.
Thyroid Clearance Rate of Plasma Iodine as Measure of Thyroid Activity. N. B. Myant and E. E. Pochin.—p. 959.
Clinical Use of Radio-Active Iodine. R. Fraser.—p. 962.
Optic Nerve Compression and Its Differential Diagnosis. S. P. Meadows. —p. 1017.

Acta Medica Orientalia, Jerusalem

8:193-222 (Nov.) 1949. Partial Index

*Induratio Penis Plastica (Peyronie's Disease): Contribution to Its Etiology and Treatment. T. Katz-Galatzi.—p. 193.
Laurence-Moon-Biedl Syndrome with Multiple Congenital Malformations of Urinary Tract. J. Landau, Y. M. Bromberg and J. Schorr.—p. 205.

Induratio Penis Plastica.—Katz-Galatzi argues that the various hypotheses advanced as to the etiology and pathogenesis of plastic induration of the penis do not stand up under criticism. From his own clinical and histologic observations he feels justified in rejecting the theory that plastic induration of the corpora cavernosa has a lymphogranulomatous basis. The fact that histologic studies showed great similarity between Dupuytren's contracture and plastic induration of the corpora cavernosa, the numerous cases of simultaneous occurrence of induratio penis plastica and Dupuytren's contracture and the excellent results in the treatment of Dupuytren's contracture with large doses of vitamin E, all prompted the author to try the same treatment in cases of plastic induration of the corpora cavernosa.

He cites 3 patients for whom he prescribed vitamin E in 100 mg. doses three or four times daily for several weeks, followed by 50 mg. doses daily for two or three months. The treatment resulted in a cure. The patients are well after more than one year without further treatment. The author believes that Dupuytren's contracture and induratio penis plastica can be classified under the one heading of fibroplastic diathesis. Combined vitamin E and radium therapy is recommended in advanced cases.

Archivos Argentinos de Pediatría, Buenos Aires

20:191-240 (May) 1949. **Partial Index**

*Brucellosis in Children. L. M. Cucullu, F. G. de Aramburu and D. A. Daro.—p. 191.
Para-Aminosalicylic Acid in Treatment of Tuberculosis. C. R. Gorriti.—p. 226.

Brucellosis.—According to Cucullu and collaborators, brucellosis in children is rare. Twelve cases have been reported in a pediatric hospital of Buenos Aires from 1935 to 1947 out of a total of 93,000 children. The authors cite a girl, 12 years of age, who was admitted to the hospital with an acute infection of three months' duration, with periodic fever, vomiting, chills, acute bone and joint pain, loss of appetite, acute anemia, ocular disturbance and rapid loss of weight. Excessive perspiration of typical unpleasant odor was present. The diagnosis was made on the basis of symptoms and the mother's statement that on the farm where the patient was living many cows had recently had abortions. The Huddleson test was strongly positive. Brucella abortus was identified in cultures from the patient's blood. Roentgenoscopy demonstrated lesions of Brucella infection in most of the skeletal bones, particularly in the cranial bones, the vertebrae, the sternum, humerus, hip bones, and the pelvic bones. The sternal lesion led to a spontaneous fracture and deformation of the chest. Penicillin, repeated blood transfusions, vaccinations against Brucella, liver therapy, and diet had not effect. Cachexia was extreme, and death occurred.

Archivos del Instituto de Cardiología de Mexico

19:475-612 (Aug. 31) 1949. **Partial Index**

*Effect of Certain Steroids on Rheumatic Arthritis. J. Robles Gil and F. Gómez Mont.—p. 607.

Effect of Certain Steroids on Rheumatoid Arthritis.—Robles Gil and Gómez Mont submit a preliminary report on the results obtained in 30 patients with rheumatoid arthritis, treated with several substances of a chemical formula resembling that of the steroids elaborated by the adrenals. The patients were given a daily intramuscular dose of 100 mg. of pregnenolone for a week followed by daily administration of 300 mg. of the same substance by mouth for one month. The treatment resulted in a decrease of joint pain and of local inflammation, increase of movements of the joints and improvement of the general condition in 22 of the 30 patients. Testosterone did not show any beneficial influence in rheumatoid arthritis.

Beiträge zur Klinik der Tuberculose, Heidelberg

103:1-162 (Aug. 1) 1949. **Partial Index**

Effect of Streptomycin on Pulmonary Tuberculosis, on Intracutaneous Tuberculin Reaction and on Tuberculin as Antigen. N. Oekonomopoulos.—p. 1.
Therapy of Severe Pulmonary Tuberculosis with Living Tubercle Bacilli (Artificially Produced Cutaneous Tuberculosis). E. Köhler. —p. 13.
Treatment of Cavities of Lower Lobe. E. Markgraf.—p. 38.
Pulmonary Function in Patients with Emphysema. H. Karch.—p. 49.
Domagk's Tb I 698 E (Sulfathiazole-Thiosemicarbazone Preparation) in Treatment of Laryngeal Tuberculosis. E. Stitz.—p. 57.
*Clinical Application of Tb I 698 in Pulmonary Tuberculosis. F. Kuhlmann and R. Knorr.—p. 69.
Observations on Familial Disposition to Tuberculosis. J. A. Laberke. —p. 101.

Clinical Application of Tb I 698 in Pulmonary Tuberculosis.—Kuhlmann and Knorr state that in the spring of 1947 Domagk put at their disposal for the treatment of otherwise hopeless cases of pulmonary tuberculosis a preparation known as **Tb I 698**, which consists of a mixture of equal parts of sulfathiazole and thiosemicarbazone. The preparation was available as a powder and in the form of dragées. Daily doses of twice 0.25 Gm. of the mixed preparation or twice 0.1 Gm. of the pure preparation should be continued for sixteen to twenty weeks. The authors never observed any permanent damage from intoxication with the drug, but disturbances in the general condition appeared occasionally. If they appear in the beginning, they are of slight importance, but if they appear late they are a warning signal of changes in various organs and necessitate interruption of the treatment. Cutaneous changes developed especially after use of the mixed preparation and in persons of light complexion; these were sometimes preceded by conjunctivitis. Some nurses who dispensed the preparation in powder form likewise contracted conjunctivitis. Changes in the blood and in renal function deserve careful watching. A total of 233 patients with pulmonary tuberculosis have been treated with this drug. The exudative lesions were especially responsive. Their treatment should be begun with small doses, whereas in foci with considerable fibrous tissue the response is retarded and larger doses are required. The authors believe that some patients will be rendered fit for surgical treatment by this therapy and that mutilating operative procedures may be avoided in persons in the early stages of tuberculosis. The treatment with this drug reduces coughing and the quantity of sputum. It does not obliterate the cavities, but it often renders the sputum negative while the cavity persists.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

93:3685-3792 (Oct. 29) 1949. **Partial Index**

Silico-Anthracosis and Tuberculosis in a Coal Mine in the Netherlands. A. C. Appelman.—p. 3703.
*Plasmatransfusions in Hemophilia. S. van Creveld and M. M. P. Paulsen.—p. 3714.
Indication for Streptomycin Therapy in Pulmonary Tuberculosis. C. de Langen.—p. 3724.

Plasma Transfusions in Hemophilia.—In an earlier communication van Creveld and Paulsen had observed that in hemophilia plasma prepared with heparin was more effective than that prepared with citrate. The transfusion of plasma to which a small quantity of heparin has been added as an anticoagulant reduces considerably the coagulation time of hemophilic patients. Products of the hydrolysis of heparin shortly after transfusion appear partly responsible for this shortening of the coagulation time. There seems to be a difference between the coagulation-promoting factor in citrated and heparinized plasma in favor of that in heparinized plasma. The characteristics of prothrombin also seem to differ in these two types of plasma. It is known that in the coagulation of hemophilic blood only a part of the prothrombin is used up. The authors investigated the prothrombin consumption in hemophilic patients before and after transfusions of citrated or heparinized plasmas and found that the consumption is only slightly or not increased after the transfusion of citrated blood, but after the transfusion of heparinized plasma much more of the prothrombin is used up.

Nordisk Medicin, Stockholm

42:1851-1882 (Dec. 2) 1949. **Partial Index**

Fatigue. Medical-Psychologic Study. M. C. Ehrström.—p. 1852.
By-Effects in Treatment with Sulfa Preparations and Antibiotics in 683 Patients. H. Begtrup and J. B. Nielsen.—p. 1857.
*Diabetes Mellitus in Bornholm County Hospital 1936-1947. After-Examination 1948. N. E. R. Hägensen.—p. 1860.
Lobotomy in Treatment of Certain Forms of Pain. I. Munkvad. —p. 1873.
Anthisan Ointment in Treatment of Pruritus Ani. K. A. Rasmussen. —p. 1875.

Diabetes Mellitus in Bornholm County Hospital, 1936 to 1947.—The 188 diabetes patients from 1936 to 1947, Hägensen states, were all treated with standard diet and insulin. The disease appears to occur more often in women than in men, and women seem more liable to complications. No difference was noted in the average age at death. The follow-up in 1948 of 97 of the surviving 105 patients with diabetes revealed greater capacity for work and better subjective state of health in the patients who followed a regulated diet with a constant carbohydrate content than in those who merely avoided sugar, but there was no demonstrable constant variation in the frequency of complications in the two groups.

Book Notices

THE REVIEWS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES AND DO NOT REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED.

Tumors of Bone. By Charles F. Geschickter, M.D., Professor of Pathology, Georgetown University Medical School, and Murray M. Copeland, M.D., Professor of Oncology, Georgetown University Medical School, Washington, D. C. Third edition. Cloth. $17.50. Pp. 810, with 642 illustrations. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5, 1949.

The twelve years that have elapsed since the second edition of this book have witnessed the introduction of a number of new entities in neoplasms of bone and in skeletal diseases of unknown etiology. The increase in the scope of the book has led to the inclusion of new chapters, such as those devoted to fibrous dysplasia, osteoid osteoma, tumors of the spine, endocrine changes in bone and rare diseases of bone. The chapters on embryology of bone and chondroblastomas as well as the chapter on treatment of sarcoma of bone have been rewritten. The classification of bone tumors, which represent the fundamental material on which this book is based, has been extended to include more than 500 additional cases. More than 100 new illustrations have been added and a large number of old ones replaced. The authors have presented the best reproductions of representative roentgenograms, gross specimens and photomicrographs.

Twenty years have elapsed since the authors began their review of the material on record in the Surgical Pathological Laboratory of Johns Hopkins Hospital and a correlation of the pathologic and clinical findings with follow-up results. They consulted the original records in conjunction with recent follow-up reports. These results have justified the original classification in regard to such disputed entities as benign giant cell tumor, benign and malignant chondroblastoma, chondrosarcoma and Ewing's endothelial myeloma.

The chapter on embryogenesis of bone and its relation to skeletal tumors is instructive. The classification of bone tumors is unchanged. Bloodgood's twenty-two diagnostic rules and therapeutic procedure are still helpful.

The book is divided into five parts, viz., embryogenesis; tumors of osseous origin; tumors of non-osseous origin; tumors of specialized skeletal structures, and differential diagnosis, which considers common inflammatory diseases, fungus infections of bone, juvenile lesions of bone and endocrinopathies and rare diseases. The last chapter is on therapeutic measures in malignant lesions of bone.

Special attention is called to the differential diagnostic chart, which many surgeons have used often to advantage. Every orthopedic surgeon, general surgeon, industrial surgeon and radiologist should have it framed or posted in a readily accessible place for quick availability. It reduces the diagnosis of many bone tumors almost to a mathematic equation.

Therapeutische Chemie: Arznei- und Desinfektionsmittel zur Bekämpfung von Infektionskrankheiten. Von Prof. Dr. Theodor Wagner-Jauregg. Paper. 35.50 Swiss francs. Pp. 272, with 1 illustration. Hans Huber, Marktgasse 9, Bern 16, 1949.

The publisher of this book, Medizinischer Verlag Hans Huber, has done much work in the field covered by the text. The book is divided into three portions and deals with antiseptics, chemotherapeutic agents and antibiotics. The essential facts concerning the many preparations under these three listings are put together in succinct form. A number of references are given which are ordinarily not covered in publications from this country. Of course, it is not as complete as one would expect, since the subjects are of considerable current interest and have been covered in extensive and detailed monographs by various workers in this field. However, it is a useful reference book since it provides an idea of the work which was done during a period when there was not a free exchange of literature.

The text is interesting but certainly not contributory to the scientific literature of current interest. The weakness of the book is the lack of many up-to-date references, which probably are only now becoming available through a friendlier exchange of publications.

Radioactive Tracer Techniques. By Geo. E. Schweitzer, Assistant Professor of Chemistry, University of Tennessee, Knoxville, and Ira H. Whitney, Chief Supervisor, Radio Chemical Process Development, Oak Ridge National Laboratories, Oak Ridge, Tenn. Cloth. $3.25. Pp. 241, with 13 illustrations. D. Van Nostrand Company, Inc., 250 4th Ave., New York 3; 228 Bloor St., W., Toronto 5; Macmillan & Company, Ltd., St. Martin's St., London, W.C. 2, 1949.

Dr. Schweitzer and Dr. Whitney have written a basic laboratory textbook on the use of radioactive materials in research. Although the book is, as the title states, written as a manual of tracer technics, it contains much useful material for workers in any field where radioactive materials are used. It should prove to be an excellent laboratory manual for a short course used to train students and technical personnel for work in laboratories using radioactive materials. It must, however, be supplemented by a good theoretic textbook in the field or by a course of lectures explaining the theory involved.

The first four chapters stress proper handling of radioactive materials, from the viewpoint of both protection of personnel and maintenance of optimum reliability of results. Radioactive hazards, decontamination, protection measures, room arrangements, equipment and experimental methods are discussed in detail by persons who are familiar with the problems encountered at the Oak Ridge National Laboratories and other such installations. Chapters V thru VIII are devoted entirely to laboratory experiments in the fields of radiochemistry, radiophysics and radiobiology. The group of experiments presented constitutes a good cross section of the type of work one encounters in radioisotope laboratories, and, although not complete, it is fully adequate for training of laboratory personnel. Chapter IX deals with the preparation of radioactive reagents to be used in the preceding experiments. Included in this chapter are many precautions which will prove useful to anyone working with the various isotopes covered. A group of appendixes including a short table of radioisotopes of tracer interest complete the book.

In conclusion it may be said that "Radioactive Tracer Techniques" fulfils the aims of its authors and also provides a good source of information for persons who seek initiation in this field.

Audiology: The Science of Hearing. A Developing Professional Specialty. By Norton Canfield, M.D., Associate Professor of Otolaryngology, Yale University School of Medicine, New Haven, Connecticut. With a Foreword by Gunnar Holmgren, Professor of Otolaryngology, Stockholm, Sweden. Publication Number 51, American Lecture Series, A Monograph in American Lectures in Otolaryngology, edited by Norton Canfield. Cloth. $1.75. Pp. 45. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Illinois, 1949.

This little monograph is a beautiful example of the printer's art. Its format, typeface, binding and paper are up to the usual high standards of the publisher. There is, incidentally, ample opportunity to appreciate the paper, because, owing to the arrangement of the material in sixteen chapters on 39 pages and the mechanical necessity of putting in blank pages at the end to make the numbers come out even, there is a remarkably high ratio (almost 1 to 1) of blank space to printed matter.

The text proper consists of about 800 lines of type, an average of 50 lines or 500 words per chapter. There is also a bibliography of 99 items, a foreword and one chart. The author's intention is apparently to indicate the scope of audiology as seen by an otolaryngologist and to point out the large number of different interests and technics that should be represented in an "audiology center." But the 500 word characterizations of each major area, such as Audiometry, Speech Therapists, Geriatric Audiology, Acoustic Physicist, Role of the Psychiatrist, will not satisfy many of those who operate in areas that are described. Neither is there a clear argument or connecting chain of thought unless it be that all these things are very important.

The audiologic center described is evidently inspired largely by the Army and Navy Aural Rehabilitation Centers as organized during World War II. It would be interesting to know how closely the organization chart, which is the climax of the discussion, corresponds to the actual organization of the three present units, Army, Navy and Veterans Administration. How many of the 32 "professional abilities" shown in Dr. Canfield's

chart as necessary for a complete audiologic center are actually represented?

In Dr. Canfield's plan the various specialists are organized into five departments (medical, acoustic, neuropsychiatric, speech and social service) under a single director. What case load and what kind of fees would be required to support such an organization? Dr. Canfield insists it must avoid being "considered a charitable contribution to the unfortunately afflicted individuals." The reviewer fails to see how all this can be accomplished for civilians except through a welfare state.

Rehabilitation of the Handicapped: A Survey of Means and Methods. Edited by William H. Soden, Executive Assistant, Physical Medicine Rehabilitation Service, Veterans Administration Hospital, Northampton, Mass. With a Foreword by Sidney Licht, M.D. Cloth. Price, $5. Pp. 399, with 3 illustrations. The Ronald Press Co., 15 E. 26th St., New York 10, 1949.

This book is a compilation of thirty-eight articles on the various phases of rehabilitation of the chronically disabled which have been prepared by forty-four authors. Twenty-four of the authors are physicians. The articles are grouped into five major sections. The first section includes discussion of some of the general medical and surgical technics as applied to physical rehabilitation. The second section indicates what may be accomplished in the rehabilitation of patients with neurologic disorders including cerebral palsy, epilepsy, multiple sclerosis, poliomyelitis and speech defects. The third section is devoted to discussions of the various technics of rehabilitation that have been developed for psychiatric patients. Vocational and social rehabilitation with an outline of the organization and work of several rehabilitation centers and programs that are already operating successfully is presented in the fourth group of articles. The final portion of the book is devoted to articles on educational and psychologic trends which are being developed in conjunction with various programs for rehabilitation of the chronically disabled.

This book provides basic material by persons experienced in the field of rehabilitation of the chronically disabled. For the most part it can be considered as a guide to the over-all field and indicates what can be done by proper organization and by adequate understanding of the problems involved. It enables the physician guiding rehabilitation programs to be aware of the various agencies and trained personnel available and qualified to assist with various phases of the rehabilitation program for his patients. The articles present primarily general concepts of the various phases of rehabilitation rather than detailed exposition of technics employed. Besides being of interest to physicians responsible for the care of the chronically disabled patients, the book is an informative guide to nonmedical personnel in the fields of education, psychology and social service who play an important part in the over-all rehabilitation programs for the chronically disabled.

What is Man? Evolution's Answer. By Alfred Machin. Cloth. 10s. 6d. Pp. 209. C. A. Watts & Co., Ltd., 5 & 6 Johnson's Court, Fleet St., London, E.C. 4, 1949.

Any one interested in the questions what is sin, how did man originate, and how did the fight begin between animal instincts and conscience will find this book intensely interesting and stimulating. The author has previously published two books dealing with these questions, namely, "The Ascent of Man by Means of Natural Selection" and "Darwin's Theory applied to Mankind." This book contains much taken from these earlier ones, with a fundamental idea added. The fundamental idea which unlocks the door and reveals the explanation of the mystery is that man was not originally a social animal; each family lived apart and hated its neighbors. Man was forced to become a social animal when by changing climate he was driven down from the trees where he formerly lived, became of necessity a hunter and a plainsman walking on two feet and began to talk and to make weapons for himself and to combine with other men for self protection.

What is now called sin is conduct which in its effects is antisocial. These animal instincts inherited from our nonsocial anthropoid ancestors, are strong within us and formerly, before socialization, had survival value for the species; but now, since we have come to live in societies, the ability to cooperate within the society is our more valuable characteristic and has had survival value for all. Hence we have a new code of ethics which is at variance with the old. These new abilities which now determine our survival are called virtues and are such. They are embodied in the ten commandments and especially in the highest of all, "Thou shalt love thy neighbor as thyself." They are commonly attributed to divine revelation and command but actually have originated from hard experience. The original worn out and discarded virtues of our antisocial anthropoid ancestors, now called sins, are similarly attributed to an evil spirit, or god of hell, the devil, who has been invented to account for them.

Hence man's anthropoid instincts are in constant strife with his more recently acquired humanity, and this social humanity is part of his conscience. Man alone of all animals lies awake at night thinking of his sins of commission and omission. Reason and conscience presumably appeared, or greatly developed, when he acquired speech some 500,000 years ago. This is the argument of the book.

Some of the statements which the author makes may be questioned; for example, every man instinctively hates his fellow men. That may be true of some but is surely not true of all. Mr. Machin has made a valuable answer to the old question of how it happens that man is as he is. The views which he expresses are comforting to many of us. They have been strongly endorsed by the eminent British anthropologist Sir Arthur Keith and have been further developed by Bertrand Russel in his recently published lectures on "Authority and the Individual." Both Sir Arthur Keith's book, "New Theory of Human Evolution" and that of Bertrand Russell just referred to can be read with pleasure and profit in connection with Mr. Machin's work.

Plant Physiology. By Melrion Thomas, M.A., F.R.S.E., Professor of Botany at King's College, Newcastle on Tyne, in the University of Durham, Durham, England. Third edition. Cloth. Pp. 504, with 70 illustrations. J. & A. Churchill, Ltd., 104 Gloucester Place, Portman Sq., London, W 1; [Grune & Stratton, Inc., 381 4th Ave., New York 16], 1947.

This third edition of an English textbook, published in 1947, has been expanded, particularly on the biochemical side. An extensive section on enzymes, particularly oxidative enzymes, zymase and phosphorylase, and new material on photosynthesis and the metabolism of dicarboxylic and tricarboxylic acids are important additions. The first part, "Protoplasm," deals with visible structures, physicochemical and biochemical properties of living material, with a proper strong emphasis on plants. Part two, "The Absorption, Translocation, and Elimination of Water, Solutes, and Gases," deals generally with the movements of materials and includes a discussion of osmotic phenomena, soils and the usual problems of water and solute. Part three, "Nutrition and Metabolism," includes a discussion of general problems and methods as well as specific chapters on photosynthesis, respiration and the polycarboxylic acids. Part four, "Growth and Movement," includes, besides these subjects a chapter on growth substances. Two appendixes offer basic information about organic compounds and physical chemistry, and a third one includes a bibliography of 344 references and author and subject indexes. The volume gives a good picture of the general physiology and biochemistry of plants at an intermediate advanced level. It should serve as a satisfactory textbook in plant physiology and as a useful reference volume for workers in other biologic fields.

Diseases of the Aorta: Diagnosis and Treatment. By Nathaniel E. Reich, M.D., F.A.C.P., Associate in Medicine, Long Island College of Medicine, Brooklyn, N. Y. Cloth. $7.50. Pp. 288, with 60 illustrations. The Macmillan Company, 60 Fifth Avenue, New York 11, 1949.

This monograph is distinguished by its brevity. It is well organized, with comprehensive coverage of all aspects of diagnosis and treatment. Special attention is drawn to the chapter on diagnostic procedures. The few shortcomings in the chapters dealing with etiology and pathogenesis of atherosclerosis and dissecting aneurysm do not depreciate the value of this monograph, which has as its primary object the general discussion of diagnosis and treatment of the diseases of the aorta. This book will prove instructive to every physician interested in cardiovascular diseases.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ACUTE HEAD COLDS IN INFANTS

To the *Editor*:—I would like the opinion of pediatricians with regard to treating acute head colds in infants. Is the instillation of medication in isotonic solutions beneficial? Instructing mothers to clean the nostrils with swabs has not been sufficient. They insist on nasal medication because other mothers have purchased medicaments over the counter for instillation. I have observed that nasal instillation is not advisable because of possible pulmonary complications.

G. W. Hosea, M.D., Homer City, Pa.

ANSWER.—Many physicians advise the use of nose drops which constrict the blood vessels of the mucous membrane. Many mothers request the use of nasal medicaments to relieve discharge and obstruction. However, there is increasing opposition by physicians and rhinolaryngologists to the use of these remedies. They have expressed the opinion that "nose drops" constrict the vessels, subepithelial capillaries and arterioles and also the venous sinuses. If vasoconstriction is protracted, vasodilatation results; sometimes the shrinking and dilatation of the nasal mucosa may lengthen the infective process and increase the danger of sinus involvement or ear infections. If ephedrine or other vasoconstrictive drugs are prescribed, not much should be expected of their curative value; they should be used in dilute form, at long intervals between dosage and only for a short time. In acute cases they are of doubtful value, though they may be tried in the presence of nasal obstruction and severe discomfort and restlessness. In subacute sinusitis they may be of value by temporarily shrinking the mucosa of the nasal cavities, enlarging the drainage space and permitting escape of fluid from the sinuses.

PROCAINE

To the *Editor*:—Information is requested concerning the safety of procaine for tissue infiltration anesthesia. How useful is the intradermal test for sensitivity and idiosyncrasy, and how should it be performed? How much does the danger depend on volume used? I have found procaine (novocaine®) an extremely useful drug, but stories of death in healthy patients following 5 cc. infiltration make one wonder how freely it may be used.

Leonard Conor, M.D., Crenshill, N. J.

ANSWER.—Procaine hydrochloride is generally accepted as the safest anesthetic agent, both on the basis of equivalent weights and on incidence of reactions in clinical usage. Procaine is thus specifically valuable for tissue infiltration anesthesia, since in many instances the amount of anesthetic agent required is considerable. The addition of epinephrine to a procaine solution or any other anesthetic fluid does not have any direct effect in the control of reactions. The action of epinephrine, when epinephrinized procaine is injected into tissue, is one of vasoconstriction of the blood supply in the anesthetized area, so that the rate of absorption of procaine by the circulatory system is decreased. This effect greatly increases the duration of anesthesia in the area.

Reactions with procaine seldom exhibit convulsions or coma. Usually the symptomology consists of nausea, retching or vomiting, fast thready pulse, decreased blood pressure, considerable diaphoresis and cold, pale skin. The therapy consists of oxygen inhalations and the intravenous administration of a vasoconstrictor such as ephedrine in one or two injections of 25 mg. each. If convulsions occur, such barbiturates as thiopental (pentothal®), pentobarbital (nembutal®) or amobarbital (amytal®) must be administered intravenously in sufficient dosage to control the convulsion. In this event it is imperative that adequate pulmonary ventilation, preferably with a high oxygen content, be maintained.

Prophylactic protection against procaine reactions is obtained with barbiturate premedication. Many reactions occurring with procaine-epinephrine solutions are actually not reactions to the procaine but are reactions to epinephrine. The patient feels nervous and highly irritable and may make convulsive-like movements with gross over-dosage. The patient feels the heart pound, and the pulse is full and bounding. Nausea and vomiting may accompany this. Other reactions result from an accidental intravenous injection. Since procaine is used for tissue infiltration in concentrations between 0.5 and 2 per cent, it is possible that as small an amount as 5 cc. might prove fatal if this amount is given intravenously.

Intravenous procaine has become a valuable clinical tool. With the patient under general anesthesia 1 per cent procaine solution given intravenously will not be harmful in judicious amounts. In the unanesthestized patient the concentration of procaine for intravenous use must be reduced to 0.1 or 0.2 per cent, and the solution must be administered slowly to avoid reactions.

Reactions to procaine will increase in frequency with increased dosage. For an adult the maximum dosage is 1 Gm. of procaine. In terms of volumes and concentrations this is equivalent to 50 cc. of 2 per cent procaine solution or 100 cc. of 1 per cent procaine solution or 200 cc. of 0.5 per cent procaine solution. This maximum dosage is lowered in pediatric or geriatric practice or debility.

Tests for procaine sensitivity are usually of little value clinically. The intradermal test is performed by raising a wheal with 0.1 cc. of procaine solution intradermally and comparing that with a similar wheal produced with the vehicle of the procaine solution, usually distilled water or isotonic sodium chloride solution.

REACTIONS FOLLOWING PROCAINE USED INTRAVENOUSLY

To the *Editor*:—Have there been any reports of anaphylactic deaths from the intravenous use of procaine? All writers on this subject mention the possible dangers, but I have been unable to find a single report of death.

Dean Swiney, M.D., San Antonio, Texas.

ANSWER.—Although numerous references have been made to sudden death following administration of procaine (Mayer, E.: *Ann. Otol., Rhin. & Laryng.* **37**:404 [March] 1928; Mayer, E.: J. A. M. A. **82**:876 [March 15] 1924), this has usually occurred after local infiltration and evidence that death was due to anaphylactic shock is lacking. Lutz and Solomon (*West Virginia M. J.* **45**:285 [Oct.] 1949) mention that some of the earlier deaths reported as due to intravenously administered procaine might have been due to the epinephrine which was frequently added to the solution. Moor (*Med. Arts and Sc.* **2**:129 [Oct.] 1948) points out that with too rapid an intravenous injection of procaine hydrochloride, convulsions may ocur. Such convulsions, if not treated promptly, may terminate quickly in death and might be misinterpreted as an anaphylactic reaction.

In general, there are two types of reaction to intravenous administration of procaine which, if untreated, may result fatally. One is collapse which is due to profound depression of the circulatory system, and the other is an action on the central nervous system which, in severe form, produces convulsions. These reactions usually respond to the intravenous administration of barbiturates, and an ampul of thiopental sodium or other barbiturate for intravenous use should be available for emergency use whenever procaine is administered intravenously. A discussion of the treatment of local anesthetic reactions appeared in Queries and Minor Notes in THE JOURNAL April 27, 1940, page 1689. There is still considerable controversy regarding the safety of intravenous use of procaine (Allen, F. M.: *Arch. Phys. Med.* **26**:759 [Dec.] 1945; Kraft, K. A.: *Canad. M. A. J.* **57**:350 [Oct.] 1947; Pool, N. de S.: Procaine Administered Intravenously, Queries and Minor Notes, J. A. M. A. **141**:362 [Oct. 1] 1949). Hence this method of administration should be used cautiously and by persons experienced in treating accidents of anesthesia.

PSYCHOANALYSIS

To the *Editor*:—It is difficult for me to assess the value of psychoanalysis in the treatment of psychoneurosis. How does it compare with nonanalytic psychotherapy?

M.D., Michigan.

ANSWER.—In his article "Results of Treatment of Psychoneuroses by the General Practitioner—A Follow-Up Study of Five Hundred Cases" (*New York State J. Med.* **46**:2164 [Oct. 1] 1946), Dr. Peter G. Denker gives results which in the opinion of some doctors compare favorably with the results obtained by psychiatrists and psychoanalysts. As a matter of fact, there is no reason why the general practitioner, if he would acquaint himself with the doctrines and technics of Freud and would give ample time to his patients suffering from emotional disturbances, could not do extremely well in relieving and even curing such patients.

Psychoanalysis is the treatment of choice in cases of neuroses and psychoneuroses, but modified or even nonanalytic psychotherapy might be of help in many cases. The chief criticisms of psychoanalysis are, of course, the length of time it takes and the costliness.

There are no reliable statistical data for the comparison of analytic versus nonanalytic psychotherapy. Evaluations like those attempted at the New York Psychiatric Institute and the Maudsley Clinic in London suffer from the fact that there are differences of opinion concerning the proper classification of psychoneuroses and, more important, the lack of sufficient or proper follow-up. However, the same lack of proper follow-up and statistics may be mentioned in the case of analytically oriented psychotherapy, especially in the private practice of psychoanalysis. In the present state of knowledge, the choice of analytic versus nonanalytic psychotherapy would have to be decided in accordance with the needs in a particular case.

CHLORIDES IN BEER

To the Editor:—The average sodium content of unsalted beer is 0.016 per cent; however, most brewers salt their beer, adding up to 10 pounds of salt to each 100 barrels. This increases the sodium chloride content of a 12 ounce (340 Gm.) container to about 130 mg. Can you give me the names of some popular brands of canned or bottled beer to which no salt is added?

M.D., New York.

ANSWER.—Hugo Rohde, Ph.D., acting as associate referee on beer of the Association of Official Agricultural Chemists with headquarters in Washington, D. C., made the following report in 1940 with reference to chlorides in beer: "Chlorides are normally present in beer in infinitesimal quantity; they have their origin in the brewing water and brewing materials. The addition of sodium chloride to the wort—a practice that was followed occasionally several generations ago—is now obsolete. Accidental leakage of brine from cooling systems may increase the salt content, but this would give rise to an unsalable product." At that time, the sodium chloride content of a series of beers was examined, and the average quantity was found to be 0.012 per cent. This figure agrees with the data found on German prewar beers. English beers contained considerably more because salt is added to some of these beers in the cask for clarification; the salt will release carbon dioxide, which under pressure aids in the removal of suspended substance which settles on the bottom of the cask. However, this practice probably is not followed at present because better clarifying agents are available. During the prohibition days, salt was added to malt beverages containing 0.50 per cent alcohol by volume to give more zest to the beverage. Dr. Rohde does not know of any large shipping brewery which adds salt to beer. In the routine chemical examination of beer, sodium chloride is not determined. Occasionally the mineral content or ash is measured. The mineral content of American beers made from malt and unmalted cereals averages 0.14 per cent. About two thirds of this consists of potassium phosphate.

LEUKOPLAKIA

To the Editor:—Please give me the newest therapy for leukoplakia involving buccal mucosa.

Hugh L. Houston, M.D., Murray, Ky.

ANSWER.—Several factors are thought to contribute to the cause and progressive development of leukoplakia. Syphilis, if present, may provide a background, and the sex of the person is important, as shown by the great preponderance of leukoplakia among men. Faulty oral hygiene, poor condition of teeth or dentures and smoking are held to be locally inciting potent factors.

When leukoplakia is seen early in its development, much often can be done to retard or stay its progress. Smoking should be given up, the teeth or dentures put in good repair and strict attention paid to the hygiene of the mouth. Foods stimulating and irritating to the mucous membrane should be avoided. Vitamin A in doses of 100,000 to 400,000 units daily may be of help when taken over a prolonged period. It has been reported that estrogens are of benefit, but convincing evidence is lacking.

If patches of leukoplakia fail to thicken and progress with these measures, nothing more need be done. However, since this disorder may be the forerunner of and furnish the site for malignant growths, one should watch for evidence of such transformation. Papillary formations, fissures and ulcers demand histologic examination. If malignant changes are not present simple cauterization to include all the thickened parts causes healing with surprising rapidity and ease. If the area requiring such treatment is extensive, a systematic plan can be adopted for attacking separate areas; a new area can be chosen after the one previously treated has healed. If malignant changes are found, then surgical measures with or without radiation therapy must be employed.

TREATMENT OF BRUCELLOSIS

To the Editor:—Kindly give information on the comparative efficacy of aureomycin and chloramphenicol (chloromycetin®) in chronic brucellosis and dosage schedules for this disease.

Luther J. Hankamp, M.D., San Diego, Calif.

ANSWER.—To date, reports concerning the comparative efficacy of aureomycin and chloramphenicol in chronic brucellosis have not been published. However, clinical investigations which are being carried out seem to indicate that chloramphenicol and aureomycin are equally effective in the treatment of both acute and chronic brucellosis. With either antibiotic, the following dosage schedule may be recommended. The total daily dose is based on 50 mg. of the antibiotic per kilogram of body weight. This is divided into four parts, one of which is given at intervals of six hours day and night for seven days. Then halve the total daily dose, divide it into four parts and give four times a day for one week. Two to three months after this course of treatment has been completed, repeat the therapy by giving the patient a three day course of treatment based on a total daily dose of 50 mg. of the antibiotic per kilogram of body weight. A note of warning must be sounded in relation to the treatment of chronic brucellosis: A diagnosis of this condition which is made on the basis of a positive skin reaction, a positive opsonocytophagic index or a single finding of a somewhat elevated titer of agglutinins against the Brucella organisms is not adequate.

MONGOLOID TYPE BABIES

To the Editor:—Are mongoloid type babies due to doubled-headed spermatozoa?

O. O. Lyons, M.D., Vancouver, British Columbia, Canada.

ANSWER.—It is not likely that mongoloid type babies are the result of double-headed spermatozoa. Hundreds of specimens must be examined before an occasional double-headed spermatozoa is seen. The motility of such a sperm is usually slow, and it is improbable that such a sperm would be capable of reaching the ovum. Examination of uterine samples of sperm after natural coitus reveals few of the abnormal sperms. In practical experience, 80,000,000 moving spermatozoa are required in the entire ejaculate for conception. Of this number, it is usual for 87 per cent to be the normal, oval type cells, and the remaining 13 per cent may be made up of the various abnormal types. It is more than likely that less than 1 per cent of the abnormal types would be the double-headed spermatozoa. In the competition of the sperm to reach the oviducts, abnormal sperms have little chance. Little is known regarding the actual cause of mongol type babies. There is a greater chance for this type of baby in women who conceive for the first time toward the end of their reproductive careers, 38 years of age or over. However, mongolism has been observed in offspring of women in various age groups.

OBSCURE FEVER IN A CHILD

To the Editor:—I would like to comment on the query about "Obscure Fever in a Child," in THE JOURNAL (Nov. 26, 1949, p. 930). In addition to the thorough study of all possible infections discussed in the previous answer to the question, food constitution requires definite consideration. Food constitution can produce regularly recurring attacks of fever, with or without other manifestations of allergy. Fever associated with recurrent attacks of bronchial asthma, often preceded by nasal allergy which suggests an infectious cold rather than the common food constitution, is usually the result of food allergy rather than infection. Recurring attacks of urticaria, gastrointestinal symptoms or nasal allergy due to food allergy may also be associated with moderate or high temperatures. Food allergy, moreover, may produce a persistent temperature varying in degree and lasting for weeks, months and occasionally for longer periods of time. (Rowe, A. H.: Fever Due to Food Allergy, Ann. Allergy 6:252-259 [May-June] 1948). Such persistent fever due to food allergy has occasioned for unnecessary repeated physical examinations, laboratory tests of all types, prolonged bed rest and sanatorium care and restrictions in vocation and recreational activities.

These regular, recurrent, self-limited bouts of fever can be explained by the gradual increase in allergic reactivity in the heat-regulating centers to the causative allergenic foods. During the allergic attack the reacting bodies are exhausted, and until they gradually reaccumulate above a reacting level the causative foods can be eaten without any fever or other allergic manifestation. The regularity of the attacks is easily explained by the time necessary for the reacting bodies to redevelop. For the study of food allergy I would recommend the use of my cereal-free elimination diet (Rowe, A. H.: Elimination Diets and the Patient's Allergies, Philadelphia, Lea and Febiger, 1941). This diet should be modified by the exclusion of any foods which have definitely disagreed with the patient, or for which there is a definite dislike, and by the inclusion of any foods in the diet to which large reactions are obtained by the scratch method. This diet, as is true with any trial diet for the study of food allergy, must be prepared in an accurate manner; it must be adhered to strictly and taken in sufficient amounts to maintain nutrition during the trial period while food allergy is being studied.

Albert H. Rowe, M.D., Oakland, Calif.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, JANUARY-APRIL 1950

Titles have been listed or abstracts made of important articles in the following journals in the Current Literature Department of THE JOURNAL during the past four months. Any of the journals, except those starred, will be lent by THE JOURNAL to subscribers in continental United States and Canada and to members of the American Medical Association for a period not exceeding three days. Three journals may be borrowed at a time. No journals are available prior to 1939. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Thus most of these journals are accessible to the general practitioner.

Acta cardiologica. Brussels.
Acta chirurgica Scandinavica. Stockholm.
Acta clinica belgica. Brussels.
Acta endocrinologica. Copenhagen.
Acta medica orientalia. Jerusalem.
Acta medica Scandinavica. Stockholm.
Acta obstetricia et gynecologica Scandinavica. Stockholm.
Acta ophthalmologica. Copenhagen.
Acta physiologica Scandinavica. Stockholm.
Acta radiologica. Stockholm.
Acta tuberculosea Scandinavica. Copenhagen.
American Heart Journal. St. Louis
American Journal of Clinical Pathology. Baltimore.
American Journal of Digestive Diseases. Fort Wayne, Ind.
*American Journal of Diseases of Children. A. M. A., Chicago.
American Journal of Hygiene. Baltimore.
American Journal of the Medical Sciences. Philadelphia.
American Journal of Medicine. New York.
American Journal of Obstetrics and Gynecology. St. Louis.
American Journal of Ophthalmology. Chicago.
American Journal of Orthopsychiatry. New York.
American Journal of Pathology. Ann Arbor, Mich.
American Journal of Physiology. Baltimore.
American Journal of Psychiatry. New York.
American Journal of Public Health. New York.
American Journal of Roentgenol. and Radium Therapy. Springfield, Ill.
American Journal of Surgery. New York.
American Journal of Syphilis, Gonor. and Venereal Diseases. St. Louis.
American Journal of Tropical Medicine. Baltimore.
American Practitioner. Philadelphia.
American Review of Tuberculosis. New York.
Anesthesiology. New York.
Annales paediatrici. Basel.
Annals of Allergy. Minneapolis.
Annals of Internal Medicine. Lancaster, Pa.
Annals of Otology, Rhinology and Laryngology. St. Louis.
Annals of the Rheumatic Diseases. London.
Annals of Surgery. Philadelphia.
Annals of Western Medicine and Surgery. Los Angeles.
Archiv für Kinderheilkunde. Stuttgart.
*Archives of Dermatology and Syphilology. A. M. A., Chicago.
Archives of Disease in Childhood. London.
*Archives of Internal Medicine. A. M. A., Chicago.
Archives des maladies du coeur. Paris.
*Archives of Neurology and Psychiatry. A. M. A., Chicago.
*Archives of Ophthalmology. A. M. A., Chicago.
*Archives of Otolaryngology. A. M. A., Chicago.
*Archives of Pathology. A. M. A., Chicago.
Archives of Pediatrics. New York.
Archives of Physical Medicine. Chicago.
*Archives of Surgery. A. M. A., Chicago.
Archivio di patologia e clinica medica. Bologna.
Archivos argentinos de pediatria. Buenos Aires.
Archivos del Instituto de cardiologia de México. México.
Arizona Medicine. Phoenix.
Arquivos de neuro-psiquiatria. São Paulo.
Athena. Rome.
Australian and New Zealand Journal of Surgery. Sydney.
Beiträge zur Klinik der Tuberkulose. Heidelberg.
Biochemical Journal. London.
Blood. New York.
Brain. London.
British Heart Journal. London.
British Journal of Cancer. London.
British Journal of Dermatology and Syphilis. London.
British Journal of Experimental Pathology. London.
British Journal of Industrial Medicine. London.
British Journal of Ophthalmology. London.
British Journal of Plastic Surgery. Edinburgh.
British Journal of Radiology. London.
British Journal of Surgery. Bristol.
British Journal of Tuberculosis. London.
British Journal of Urology. London.
British Journal of Venereal Diseases. London.
British Medical Journal. London.
Bruxelles-médical. Brussels.
Bulletin of the Johns Hopkins Hospital. Baltimore.
Bulletin of the Los Angeles Neurological Society. Los Angeles.
Bulletin of the New York Academy of Medicine. New York.
Bulletin of the U. S. Army Medical Department. Washington, D. C.
California Medicine. San Francisco.
Canadian Journal of Public Health. Toronto.
Canadian Journal of Research. Medical Sciences. Ottawa.
Canadian Medical Association Journal. Montreal.
Cancer. New York.
Cancer Research. Chicago.
Cardiologia. Basel.
Cincinnati Journal of Medicine. Cincinnati.
Connecticut State Medical Journal. Hartford.
Cuore e circolazione. Rome.
Delaware State Medical Journal. Wilmington.
Deutsche medizinische Wochenschrift. Stuttgart.
Diseases of Chest. Chicago.
Edinburgh Medical Journal. Edinburgh.
Endocrinology. Springfield, Ill.
Experimental Medicine and Surgery. Brooklyn.
Gastroenterology. Baltimore.
Geriatrics. Minneapolis.
Glasgow Medical Journal. Glasgow.
Gynaecologia. Basel.
Harefuah. Jerusalem-Tel Aviv.
Hawaii Medical Journal. Honolulu.
Helvetica paediatrica acta. Basel.
Illinois Medical Journal. Chicago.
Indian Journal of Medical Research. Calcutta.
Indian Medical Gazette. Calcutta.
Industrial Medicine. Chicago.
International Journal of Leprosy. New Orleans.
Irish Journal of Medical Science. Dublin.
Journal of Allergy. St. Louis.
Journal of Applied Physiology. Washington, D. C.
Journal of the Arkansas Medical Society. Fort Smith.
Journal of Aviation Medicine. St. Paul.
Journal of Bacteriology. Baltimore.
Journal of Bone and Joint Surgery. Boston.
Journal de chirurgie. Paris.
Journal of Clinical Endocrinology. Springfield, Ill.
Journal of Clinical Investigation. Cincinnati.
Journal of Clinical Pathology. London.
Journal of Endocrinology. London.
Journal of Experimental Medicine. New York.
Journal of the Florida Medical Association. Jacksonville.
Journal of Gerontology. Springfield, Ill.
Journal of Hygiene. London.
Journal of Immunology. Baltimore.
Journal of the Indiana State Medical Association. Indianapolis.
Journal of Industrial Hygiene and Toxicology. Baltimore.
Journal of Infectious Diseases. Chicago.
Journal of International College of Surgeons. Chicago.
Journal of Investigative Dermatology. Baltimore.
Journal of the Iowa State Medical Society. Des Moines.
Journal of the Kansas Medical Society. Topeka.
Journal of Laboratory and Clinical Medicine. St. Louis.
Journal of Laryngology and Otology. London.
Journal of the Maine Medical Association. Portland.
Journal of the Medical Association of the State of Alabama. Montgomery.
Journal of the Medical Association of Georgia. Atlanta.
Journal of the Medical Society of New Jersey. Trenton.
Journal of Mental Science. London.
Journal of the Michigan State Medical Society. Lansing.
Journal of the Missouri State Medical Association. St. Louis.
Journal of the Mount Sinai Hospital. New York.
Journal of National Cancer Institute. Washington, D. C.
Journal National Malaria Society. Columbia, S. C.
Journal of Nervous and Mental Disease. New York.
Journal of Neurology, Neurosurgery and Psychiatry. London.
Journal of Neuropathology and Experimental Neurology. Baltimore.
Journal of Neurophysiology. Springfield, Ill.
Journal of Neurosurgery. Springfield, Ill.
Journal of Nutrition. Philadelphia.
Journal of Obstetrics and Gynaecology of the British Empire. Manchester.
Journal of the Oklahoma State Medical Association. Oklahoma City.
Journal of Pathology and Bacteriology. Edinburgh.
Journal of Pediatrics. St. Louis.
Journal of Pharmacology and Experimental Therapeutics. Baltimore.
Journal of the Philippine Medical Association. Manila.
Journal of Physiology. Cambridge.
Journal of the Royal Institute of Public Health and Hygiene. London.
Journal of the South Carolina Medical Association. Florence.
Journal of the Tennessee State Medical Association. Nashville.

*Cannot be lent.

Journal of Thoracic Surgery. St. Louis.
Journal of Tropical Medicine and Hygiene. London.
Journal of Urology. Baltimore.
Journal of Venereal Disease Information. Washington, D. C.
Journal-Lancet. Minneapolis.
Kentucky Medical Journal. Bowling Green.
Klinische Wochenschrift. Heidelberg.
Lancet. London.
Laryngoscope. St. Louis.
Laval Médical. Quebec.
Lyon chirurgical. Paris.
Maandschrift voor kindergeneeskunde. Leyden.
Medical Annals of the District of Columbia. Washington.
Medical Journal of Australia. Sydney.
Medicina. Buenos Aires.
Medicina clínica. Madrid.
Medicine. Baltimore.
Medizinische Klinik. Munich.
Mental Hygiene. Albany, N. Y.
Military Surgeon. Washington, D. C.
Minnesota Medicine. St. Paul.
Nebraska State Medical Journal. Lincoln.
Nederlandsch tijdschrift voor geneeskunde. Amsterdam.
Nederlandsch tijdschrift voor verloskunde en gynaecologie. Haarlem.
New England Journal of Medicine. Boston.
New Orleans Medical and Surgical Journal. New Orleans.
New York State Journal of Medicine. New York.
New Zealand Medical Journal. Wellington.
Nordisk medicin. Stockholm.
North Carolina Medical Journal. Winston-Salem.
Northwest Medicine. Seattle.
Ohio State Medical Journal. Columbus.
Paris médical. Paris.
Pediatrics. Springfield, Ill.
Pennsylvania Medical Journal. Harrisburg.
Philippine Journal of Surgery. Manila.
Physiological Reviews. Baltimore.
Plastic & Reconstructive Surgery. Baltimore.
Practitioner. London.
Praxis. Bern.
Prensa médica argentina. Buenos Aires.
Presse médicale. Paris.
Proceedings of Royal Society of Medicine. London.
Proceedings of the Society for Experimental Biology and Medicine. Utica, N. Y.
Proceedings of the Staff Meetings of the Mayo Clinic. Rochester, Minn.
Progrès médical. Paris.
Psychiatric Quarterly. Utica, N. Y.
Psychiatry. Washington, D. C.
Psychoanalytic Review. Albany, N. Y.
Psychosomatic Medicine. New York.
Public Health Reports. Washington, D. C.
Puerto Rico Journal of Public Health and Tropical Medicine. San Juan.
Quarterly Journal of Medicine. Oxford.
Quarterly Journal of Studies on Alcohol. New Haven, Conn.
Radiology. Syracuse, N. Y.
Review of Gastroenterology. New York.
Revista de la Asociación médica argentina. Buenos Aires.
Revista brasileira de medicina. Rio de Janeiro.
Revista chilena de pediatría. Santiago.
Revista clínica española. Madrid.
Revista española de pediatría. Zaragoza.
Revista do Hospital das clínicas. São Paulo.
Revista do Instituto Adolfo Lutz. São Paulo.
Revista médica de Chile. Santiago.
Revista de la Sociedad de pediatría del litoral. Rosario.
Revue du rhumatisme. Paris.
Rhode Island Medical Journal. Providence.
Riforma medica. Naples.
Rocky Mountain Medical Journal. Denver.
Scandinavian Journal of Clinical and Laboratory Investigation. Oslo.
Schweizerische medizinische Wochenschrift. Basel.
Schweizerische Zeitschrift für Tuberkulose. Basel.
Semaine des hôpitaux de Paris. Paris.
Semana médica. Buenos Aires.
South African Medical Journal. Cape Town.
South Dakota Journal of Medicine. Sioux Falls.
Southern Medical Journal. Birmingham, Ala.
Southern Surgeon. Atlanta, Ga.
Southwestern Medicine. El Paso, Texas.
Strasbourg médical. Strasbourg.
Surgery. St. Louis.
Surgery, Gynecology and Obstetrics. Chicago.
Texas State Journal of Medicine. Fort Worth.
Thorax. London.
Transactions of the Royal Society of Tropical Medicine and Hygiene. London.
Tubercle. London.
Ugeskrift for laeger. Copenhagen.
United States Naval Medical Bulletin. Washington, D. C.
Urologic and Cutaneous Review. West Palm Beach, Fla.
Virginia Medical Monthly. Richmond.
Western Journal of Surgery, Obstetrics and Gynecology. Portland, Ore.
West Virginia Medical Journal. Charleston.
Wiener klinische Wochenschrift. Vienna.
Wiener medizinische Wochenschrift. Vienna.
Wisconsin Medical Journal. Madison.
Yale Journal of Biology and Medicine. New Haven.

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SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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Acad.—Academy
Am.—American
A.—Association
Coll.—College
Comm.—Commission
Com.—Committee
Conf.—Conference
Cong.—Congress
Dist.—District
Div.—Division
Found.—Foundation
Hosp.—Hospital
Industr.—Industrial
Inst.—Institute
Internat.—International
M.—Medical
Med.—Medicine
Nat.—National
Pharm.—Pharmaceutical
Phys.—Physician
Soc.—Society
Surg.—Surgery
Surgs.—Surgeons
S.—Surgical

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